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PUBLIC SAFETY ELEMENT

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This Element meets all criteria for the State-mandated Seismic Safety and Safety Elements

Prepared by:

Planning Department
City of Oceanside
May, 1975

Approved by:

Planning Commission
City of Oceanside
Resolution No. 75-P27
June 2, 1975

Adopted by:

City Council
City of Oceanside
Resolution No. 75-110
September 9, 1975

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Ralph T. Favia
Planning Director

City Hall
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Oceanside, California 92054

May 14, 1975

Honorable Mayor and City Council
Chairman and Members of the
Planning Commission

SUBJECT: Public Safety Element - Amendment to the General Plan

Gentlemen:

It is with pleasure that we transmit to you for your approval the Public Safety Element to the General Plan of the City of Oceanside. The report consolidates into one document the requirements of both the Seismic Safety Element and the Safety Element, which elements are mandated by the State of California of all cities in the State.

The effect of these elements is to require cities to take seismic hazards into account in their planning programs and to introduce safety considerations in the planning process. The basic objectives of these requirements are to reduce loss of life, injury, damage to property, and economic and social dislocation that may result from future earthquakes, fire, and dangerous geological occurrences.

The report was prepared by the staff of the Planning Department with the assistance and cooperation of City staff and department heads.

Respectfully submitted,

Ralph T. Favia

RALPH T. FAVIA
Planning Director

RTF:pc

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* Resigned, March, 1975

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Introduction

Oceanside, like many other urban centers in California, is subject to certain potential hazards, such as earthquakes, fire, and flooding, the severity of which has a direct bearing upon the quality of life enjoyed by the City's residents. This severity is often directly proportional to the intensity and density of urban development and the proximity of the development to the hazard source. In many cases, however, corrective and preventive measures taken by the City and individual citizens can do much to eliminate or reduce the risk involved.

It is the purpose of the Public Safety Element of the General Plan to identify these hazards, and develop appropriate mitigation measures which can and should be integrated into the planning and decision-making processes of the City. Knowledge of the existing hazards and consideration of possible corrective action can do much to reduce life loss, injuries and property damage resulting from natural causes and man-made occurrences.

AUTHORITY

The State of California, in 1971, adopted legislation requiring a Safety and a Seismic Safety Element to the General Plan for all cities and counties. This legislation is found in Government Code Sections 65302(f) and 65302.1 as follows:

> A Seismic Safety Element consisting of an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to ground shaking, to ground failures, or to the effects of seismically induced waves such as tsunamis and seiches.
>
> The Seismic Safety Element shall also include an appraisal of mudslides, landslides, and slope stability as necessary geologic hazards that must be considered simultaneously with

other hazards such as possible surface ruptures from faulting, ground shaking, ground failure, and seismically induced waves.

A Safety Element for the protection of the community from fires and geologic hazards including features necessary for such protection as evacuation routes, peak load water supply requirements, minimum road widths, clearances around structures, and geologic hazard mapping in areas of known geologic hazard.

The General Plan Guidelines of the California Council on Intergovernmental Relations notes that there are several similarities and strong dependencies in the requirements of these two elements. For this reason, the Council recommends a single document which addresses the requirements of both elements or, at least, concurrent preparation of the separate documents.

The Oceanside Public Safety Element is the single City policy document which meets all the requirements for both the Safety and Seismic Safety Elements as defined by the State of California.

SCOPE OF THE ELEMENT

This Element is meant to serve as a guide for introducing safety considerations into the planning process in order to reduce loss of life, injuries, damage to property and economic and social dislocation resulting from fire, flooding, and seismic occurrences.

The area of this plan's jurisdiction is the incorporated limits of the City of Oceanside and the sphere of influence as adopted by City Council Resolution 74-139 of June 26, 1974. This area is referred to in the report as the "study area." It is understood that the policies outlined herein cannot be directly applied to those areas outside the present city limits; however, the appropriateness of planning for areas beyond the city boundaries which may significantly affect a city's planning process is recognized by Oceanside and authorized by the State of California, Government Code Section 65300.

The major areas of concern addressed in this report are:

1. Seismic and Geologic Hazards
2. Fire Hazards
3. Flooding Hazard due to dam failure
4. Civil Disaster Preparedness

Each of these hazards is defined, identified and discussed in relation to its severity and probable frequency of occurrence throughout the study area. Various levels of risk are discussed, and maps are included showing those areas of highest risk in the City. Possible mitigation and abatement measures are presented and safety criteria, standards and policies are formulated which represent Oceanside's approach toward consideration of safety factors and implementation of such factors into the City's planning process.

RELATIONSHIP TO OTHER GENERAL PLAN ELEMENTS

The Public Safety Element is one of the group of elements containing information and city policies relating to Environmental Resource Management. Other elements of this group include Open Space, Noise, and Conservation. Because of this close relationship, much of the information contained in these reports, of necessity, is duplicated to some extent in the others. Of particular interest to this element is the discussion on natural flooding in the Open Space and Conservation Elements. Coordination of the information contained in these reports is essential to determining those areas of the City which contain multiple environmental concerns requiring special planning considerations.

The Public Safety Element also contributes to developing land use standards and policies. These criteria will relate type and intensity of use to the level of risk from fire, flooding and seismic hazards, to the effect of development upon that risk, and to the availability of services and facilities to mitigate the hazards. As such, it serves as a direct source of data and city policies for developing land use districts and a circulation system as contained in the Land Use and Circulation Elements.

The findings contained in the Public Safety Element would also have a direct effect on implementation of those specialized land uses and facilities such as public buildings and utilities as outlined in the Education and Recreation Facilities Element and the Utilities Element. Any standards for construction of public housing as might be recommended in the Population and Housing Element should also consider the recommendations of the Public Safety Element.

DETERMINATION OF RISK

To effectively deal with each of the hazards discussed in this report, the City must assess the degree of risk associated with them and then decide if that level of risk is acceptable, morally, socially, and economically. These acceptable levels of risk can be viewed as the "Goals" the City will strive to reach and maintain to insure the public safety.

There is no such thing as a perfectly hazard-free environment. Natural and man-made hazards of some kind and degree are always present. However, efforts can be productively undertaken to try to mitigate the consequences of known hazards - to reduce the level of risk associated with them.

In the context of the Public Safety Element, the problem of risk is one of public policy and the appropriate allocation of public resources to mitigate the identified hazards. The central question is "how safe is safe enough?"

The California Council on Intergovernmental Relations in their General Plan Guidelines defines acceptable risk as "The level of risk below which no specific action by local government is deemed to be necessary." Conversely, unacceptable risk is that "level of risk above which specific action by government is deemed necessary to protect life and property." In economic language, risk can be evaluated in terms of cost-benefit - i.e., at what point do the costs of reducing the risk exceed the actual benefits of the risk reduction? It is the same

question we as individuals or as a family ask in regard to personal home safety, life insurance, etc. "Is the cost of this program, service or device worth the extra protection it provides for me and my family?" Of course, putting a price tag on the public safety is often a difficult decision, subject to a host of social, moral, and ethical considerations.

One way of establishing, or rating, the level of risk associated with fire is the Grading Schedule for Municipal Fire Protection, a grading system used by Insurance Services Office of New York. This system establishes a fire rating for municipalities for insurance purposes. Various elements of the fire protection system, including water supply, personnel training, and equipment levels, are studied, and deficiency points are assigned to determine a city's basic rate or class from 1 to 10. A class 1 rating indicates the lowest risk, class 10 indicates the highest. At the present time, the Oceanside Fire Department strives to maintain a level of fire protection that will provide adequate protection to the lives and property of the residents of Oceanside at a reasonable cost. In terms of the fire rating system, they have determined that a class 5 rating constitutes an acceptable level of risk for the City at this time. Additional growth of the City and especially location of additional industry within the City would require a re-evaluation of the acceptable risk level.

Levels of risk for seismic hazards and flooding due to dam failure are much more difficult to determine. As noted later in this report, location and past activity of known fault lines indicates that Oceanside is in a relatively low risk seismic area; however, it is also noted that present earthquake technology is not far enough advanced at this time to be absolutely accurate in its findings and predictions. The risk associated with dam failure, other than faulty construction and sabotage, is directly linked to existing seismic conditions.

Even though lacking the knowledge to predict the frequency and severity of earthquakes which may trigger geologic and flooding disasters, the risk associated with these possible hazards can still be

mitigated to some degree. For example, the risk associated with the failure of Henshaw Dam has been reduced significantly by State action to decrease the capacity of the lake. In like manner, action by the City to prohibit development in the possible inundation area would reduce the risk to life and property to almost zero, if this is the level of risk desired. Similarly, the risk associated with seismic and geologic hazards in general could be significantly reduced by prohibiting building in those areas of the City where known soils conditions are particularly susceptible to geologic failure.

The prohibition of all construction within designated areas of the City, however, is not recommended; nor is it necessarily a sound political or economic policy. Although a near zero level of risk would be attained, it must be balanced against the economic costs of such a policy. Other measures could be taken to mitigate the hazards to some extent which would be more acceptable in terms of the political, social and economic costs involved. One way of determining what this higher level of risk is would be to use a "greatest safety for the greatest number" approach.

As mentioned earlier, the degree of risk is directly related to density of development. Structures and areas serving a large number of people at one time such as theaters and hospitals are particularly susceptible to disaster. Prohibiting the construction of these facilities in areas of high potential hazards and limiting other development to low-density uses, would reduce the risk.

Structures and uses can be grouped into three basic categories reflecting their relative sensitivity to a natural hazard. The type of development allowed in any area would then depend upon the severity of the hazard in that area. The following groupings might serve the purposes of Oceanside in determining acceptable uses in hazardous areas.

Group I: Land Uses Which are Very Sensitive to Risk

Emergency facilities, such as hospitals, medical clinics, fire stations, police stations, post-earthquake aid centers, etc.

Involuntary facilities, such as hospitals, convalescent centers, nursing homes, schools, playgrounds, libraries, museums, prisons, etc.

Voluntary facilities with high occupancy, such as auditoria, theaters, churches, large industrial and commercial centers, large apartments and hotels, etc.

Utility facilities, such as power plants, power transport lines and stations, water supply centers, etc.

Major communication and transportation facilities, such as telephone and telegraph terminals, exchanges and facilities, major highways (including bridges, tunnels, etc.), major airports, railway stations, etc.

Water retention structures, such as dams, reservoirs, etc.

Group II: Land Uses Which are Moderately Sensitive to Risk

Voluntary facilities with low occupancy, such as single residences, small apartments, motels and townhouses, small commercial and industrial offices and shops, small government office buildings, etc.

Minor communication and transportation facilities, such as local access roads, parkways, etc.

Group III: Land Uses Which are Relatively Insensitive to Risk

Voluntary facilities of very low occupancy, such as warehouses, storage areas, etc.

Open spaces, such as parks, golf courses, agricultural land, marshlands, salt ponds, sanitary landfill sites, etc.

GOALS AND OBJECTIVES FOR PUBLIC SAFETY

Goals and Objectives are broad statements of the City's intent to mitigate or eliminate an identified risk. The actual programs to be developed are in the form of recommendations.

In very general terms, one goal will express Oceanside's approach to public safety.

> Take the action necessary to ensure an acceptable level of public safety for prevention and reduction of loss of life and personal property of the citizens of Oceanside.

To meet this goal, objectives must be specified to ensure appropriate action will be taken for mitigation of each of the hazard areas identified in Oceanside. These objectives are described below:

Seismic and Geologic Hazard

1. Consider seismic and geologic hazards when making land use decisions particularly in regard to critical structures.
2. Minimize the risk of occupancy of all structures from seismic and geologic occurrences.
3. Provide to the public all available information about existing seismic and geologic conditions.

Fire Hazard

1. Maintain the necessary equipment, personnel and water supply levels required for the current class 5 insurance rating over the entire city.
2. Continue an active and effective fire prevention program through public education, code enforcement, and inspection service.

Flooding Hazard

1. Consider the potential for flooding when making land use decisions.
2. Ensure public awareness of existing flooding hazards.

MAJOR FINDINGS AND RECOMMENDATIONS

The level of risk associated with each of the hazards identified in this report can be mitigated to some degree by positive action by the City, other government agencies and private individuals. It will require conscientious effort on the part of the entire community to fully achieve the goal and objectives for public safety as outlined. Many essential programs are already being conducted within the City and many of the necessary ordinances are already in effect, such as the weed abatement program and the grading ordinance.

The following major findings and recommendations are summarized here according to each identified hazard to provide an overall view of the program which will be pursued for attaining the Public Safety Goal and Objectives.

Seismic and Geologic Safety

Findings

(1) There are no active fault zones within the Oceanside Study Area and, therefore, very low potential for hazard from primary seismic effects.

(2) There are several active fault zones within 100 miles, creating the potential for hazard from secondary seismic effects.

(3) 75% of the study area could be developed using conventional engineering methods; however, there exists within the City certain soil types and conditions which are particularly susceptible to seismic and non-seismic geologic hazards.

Recommendations

(1) Regulate land use to some degree in areas identified as highly susceptible to hazards.

(2) Expand requirements for soils and geologic testin

(3) Study possible adoption of a Hillside Ordinance.

(4) Include seismic considerations in the building inspection program.

(5) Pursue correction of Beach Erosion problems.

Fire Safety

Findings

(1) The most severe problem in providing fire protection in Oceanside is the danger of low water pressure especially in the downtown and beach areas.

(2) The most serious equipment deficiency is the lack of an aerial ladder for new high-rise structures over 35 feet.

(3) There are areas of the City exposed to a severe or extreme brush fire hazard.

(4) The majority of current City Codes and Ordinances relating to fire prevention are adequate and in some cases superior.

Recommendations

(1) Continue all measures, including correction of water problems, which would enable the City to retain its current Class 5 rating.

(2) Continue to study methods of upgrading the fire rating to match City growth, especially as industry locates within the City.

(3) Purchase and man an aerial ladder.

Flooding Safety (in relation to dam failure)

Findings

(1) The possible extent of flooding in the San Luis Rey River Valley due to failure of Henshaw Dam does not exceed the anticipated 100 year natural flood.

(2) Recent State action limiting the capacity of Lake Henshaw has greatly reduced the flooding potential.

Recommendations

(1) Continue to pursue the construction of a flood channel in the San Luis Rey Valley capable of handling a 100-year flood.

(2) Regulate land uses within the inundation area pending construction of the channel.

Seismic and Geologic Hazards

San Diego County is a region of known seismic activity. Earthquakes have been documented as far back as 1769 when the Portola expedition passed through this area of Alta California. The eastern portion of the region contains several sizeable active faults, as does the ocean floor just five miles off shore (See Map 1).

A full description and analysis of the seismic conditions within Oceanside are contained in a report entitled Geotechnical Investigations for General Plan Revisions, Oceanside, California prepared by Burkland and Associates, geologic engineers. The report is available from the Oceanside Planning Department. The information presented below is a summary of the major findings of that report.

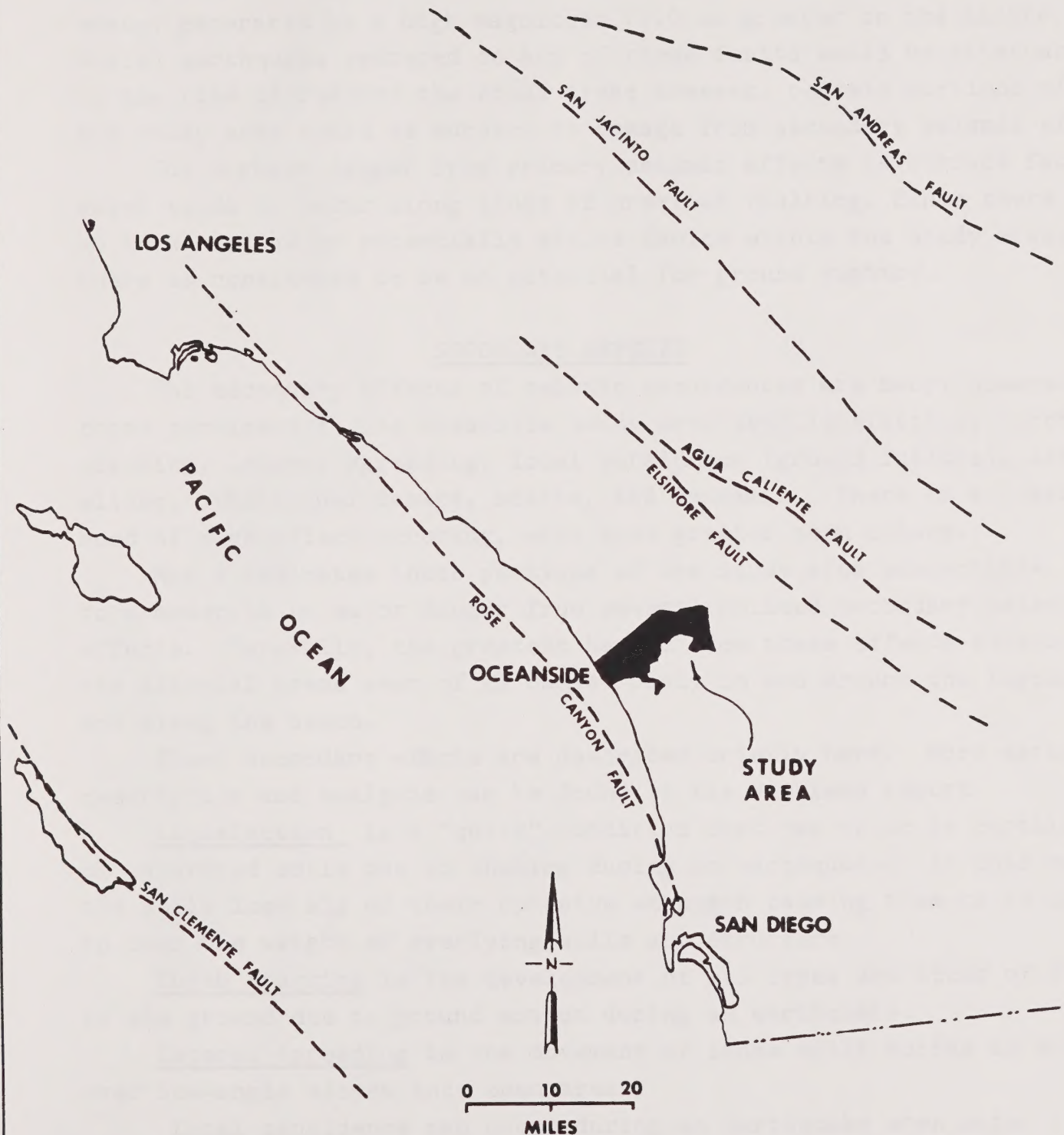
PRIMARY EFFECTS

Primary seismic effects are caused by movement along an active fault. These movements can be sudden and severe as in an earthquake or slow and imperceptible as in fault creep. The movement along a fault can be horizontal, vertical or a combination of both. The width of the ground rupture zone is usually less than 20 feet in rock, but can be up to 60 feet in soft, saturated soils.

There are no proven active or potentially active faults within the City of Oceanside or its sphere of influence. There is one active fault, the Rose Canyon fault, within a radius of 25 miles. This fault has been mapped approximately five miles offshore of the study area by the U. S. Geological Survey. There has been a great deal of controversy about the location of the fault and whether a branch turns toward shore and enters the study area. It is the firm conclusion of Burkland and Associates that this is not the case.

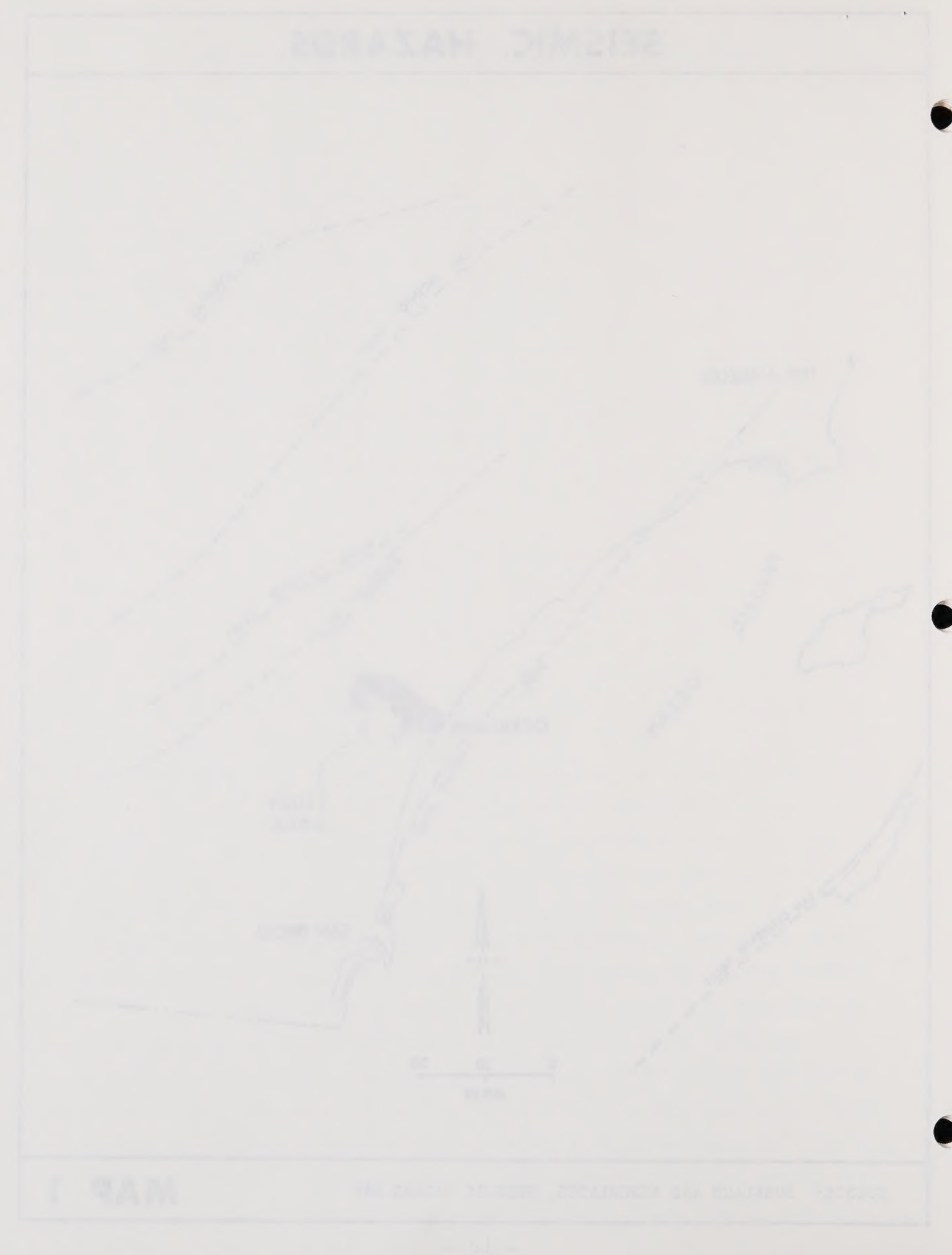
The earthquake history of the Rose Canyon fault is active. In 1812, San Juan Capistrano was destroyed by an epicenter on this fault, and this fault was also responsible for the Long Beach earthquake of 1933. An earthquake of a magnitude of 6.5 or greater with its epicenter on the Rose Canyon fault could result in secondary seismic effects in the study area.

SEISMIC HAZARDS



SOURCE: BURKLAND AND ASSOCIATES, SEISMIC HAZARD MAP

MAP 1



In addition to the Rose Canyon fault, there are four major active fault zones within 100 miles of Oceanside (Map 1). They are the Elsinore fault zone, 25 miles from the coast; Agua Caliente fault zone, 33 miles from the coast; San Jacinto fault zone, 48 miles from the coast; and the San Andreas fault zone, 77 miles from the coast. The energy generated by a high magnitude (7.0 or greater on the Richter Scale) earthquake centered on any of these faults would be attenuated by the time it reached the study area; however, certain portions of the study area could be subject to damage from secondary seismic effects.

The highest danger from primary seismic effects is surface faulting which tends to occur along lines of previous faulting. Since there are no known active or potentially active faults within the study area, there is considered to be no potential for ground rupture.

SECONDARY EFFECTS

The secondary effects of seismic occurrences are many; however, those pertinent to the Oceanside study area are liquefaction, lurch cracking, lateral spreading, local subsidence (ground failure), landslides, vibrational damage, seiche, and tsunamis. There is a likelihood of each effect occuring, with some greater than others.

Map 2 indicates those portions of the study area susceptible to a moderate to major danger from several related secondary seismic effects. Generally, the greatest hazard from these effects exists in the alluvial areas west of El Camino Real, in and around the lagoons, and along the beach.

These secondary effects are described briefly here. More detailed description and analysis can be found in the Burkland report.

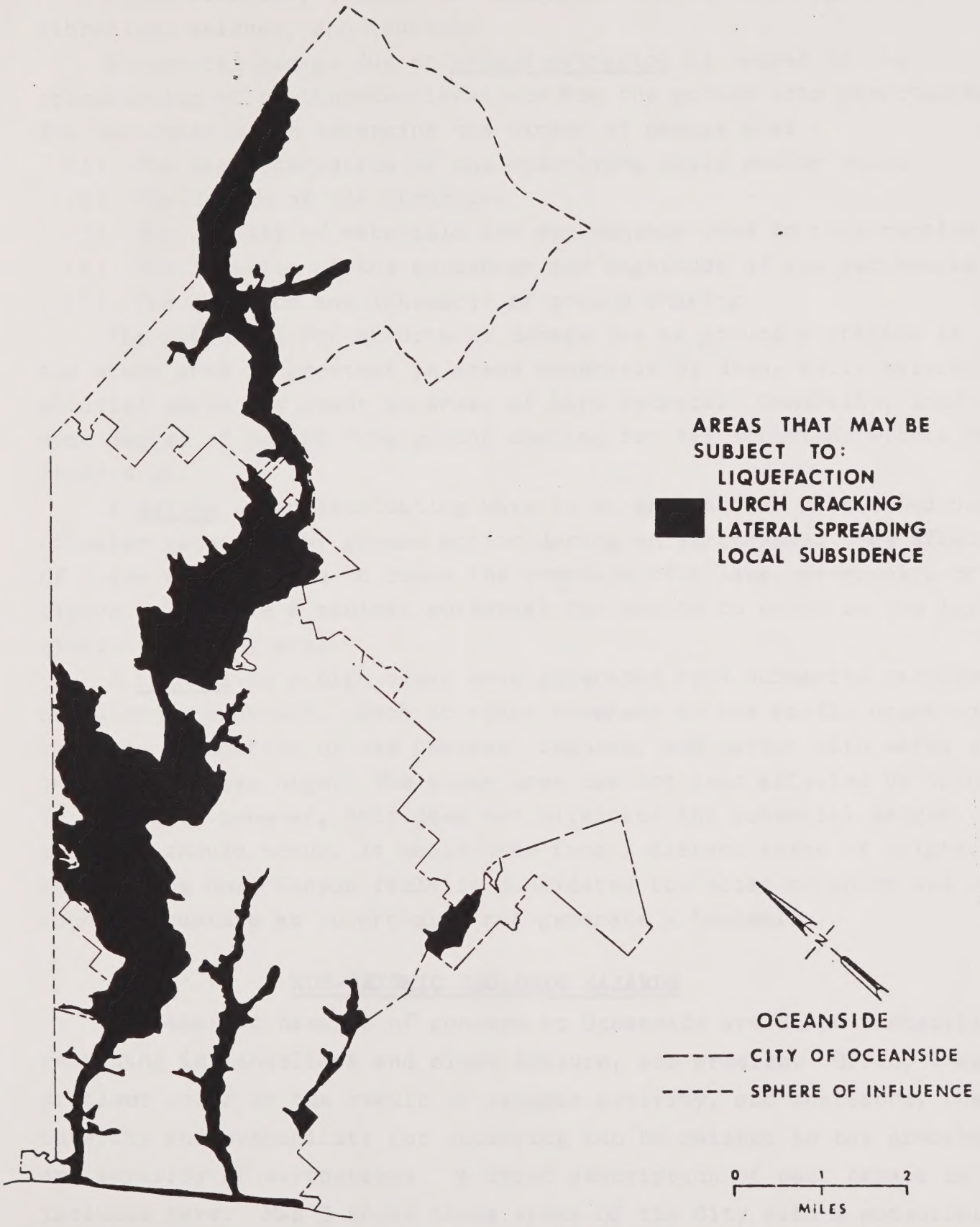
Liquefaction is a "quick" condition that can occur in certain types of saturated soils due to shaking during an earthquake. In this conditio the soils lose all of their cohesive strength causing them to be unable to bear the weight of overlying soils and structure.

Lurch cracking is the development of all types and sizes of fissures in the ground due to ground motion during an earthquake.

Lateral spreading is the movement of loose soils during an earthquak over low-angle slopes into open areas.

Local subsidence can occur during an earthquake when water is driven out of saturated soils causing the soils to become more compact.

AREAS OF POTENTIAL HAZARDS



Source: Burkland and Associates,
Geotechnical Evaluation Map Areas VI & VII

MAP 2

Other secondary effects not indicated on Map 2 are ground vibration, seiches, and tsunamis.

Structural damage due to ground vibration is caused by the transmission of earthquake vibrations from the ground into structures. The variables which determine the extent of damage are:

(1) The characteristics of the underlying soils and/or rocks
(2) The design of the structure
(3) The quality of materials and workmanship used in construction
(4) The location of the epicenter and magnitude of the earthquake
(5) The duration and intensity of ground shaking

The potential for structural damage due to ground vibration in the study area is greatest in areas underlain by deep, soft, saturated alluvial soils and least in areas of hard bedrock. Generally, there is some degree of hazard from ground shaking for all locations within the study area.

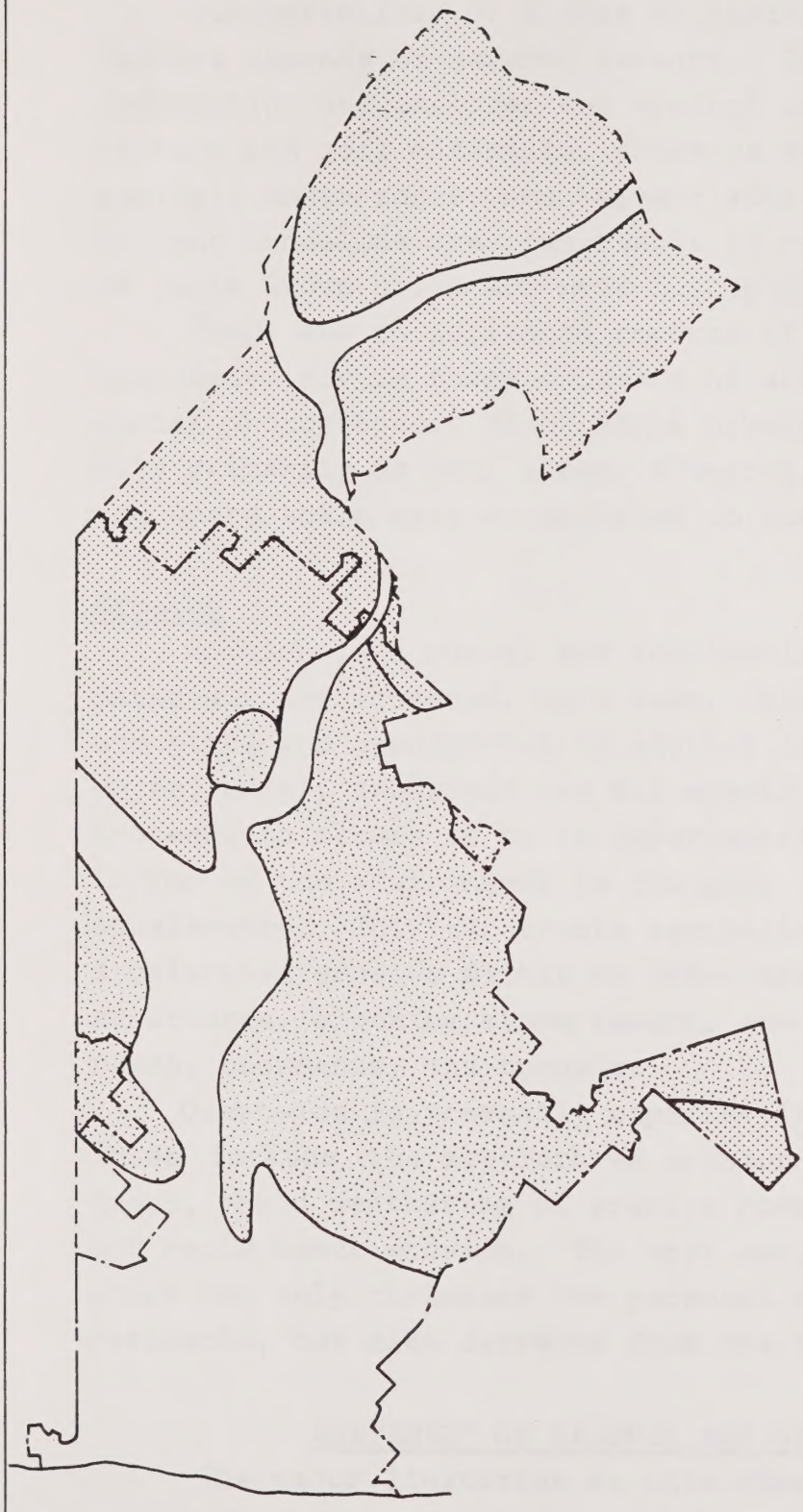
A seiche is an oscillating wave in an enclosed or restricted body of water generated by ground motion during an earthquake. The effect of these waves can be to cause the overflow of a lake, reservoir, or lagoon. There is a minimal potential for seiche to occur in the lagoons within the study area.

A tsunami is a high ocean wave generated by a submarine earthquake or volcanic eruption. Such an event anywhere in the Pacific Ocean could threaten inundation of the beaches, lagoons, and harbor with waves up to 10 to 15 feet high. The study area has not been affected by tsunamis in the past; however, this does not eliminate the potential danger. If a threat should occur, it would come from a distant point of origin, because the Rose Canyon fault is considered too close to shore and of such a structure as to probably not generate a tsunami.

NON-SEISMIC GEOLOGIC HAZARDS

Non-seismic hazards of concern to Oceanside are slope instability, resulting in landslides and slope failure, and erosion. Often, these problems occur as the result of seismic activity, and therefore, their severity and probability for occurring can be related to the probability and severity of earthquakes. A brief description of each hazard is included here. Map 3 shows those areas of the City with a potential for slope instability.

SLOPE STABILITY



SLOPE STABILITY

- LEAST SUSCEPTIBLE TO LAND SLIDES
- SUSCEPTIBLE TO LAND SLIDES
- MOST SUSCEPTIBLE TO LAND SLIDES

N

OCEANSIDE

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MILES

SOURCE: BURKLAND AND ASSOCIATES, SLOPE STABILITY MAP

MAP 3

Slope Instability

Susceptibility of slopes to landslides and other forms of slope failure depends on several factors. These are usually present in combination and include, but are not limited to, steep slopes, condition of rock and soil materials, presence of water, formational contacts, geologic shear zones, and seismic activity. Development in a stable, ancient landslide area can result in re-activation of the slide. The La Jolla Group soils are most susceptible to slope instability.

There are no published reports of landslides occurring within Oceanside, nor is there evidence of any found in reconnaissance or aerial photographs. Minor slope movement is occurring throughout the City primarily as soil creep, slumping, and sloughing along road cuts and where soils have accumulated on steep slopes.

Erosion

Erosion is a normal and inevitable geologic process whereby earth materials are loosened, worn away, decomposed or dissolved, removed from one place and transported to another location. Precipitation, running water, waves, and winds are all agents of erosion. Ordinarily, erosion proceeds so slowly as to be imperceptible, but when the natural equilibrium of the environment is changed, the rate of erosion can be greatly accelerated. This can create aesthetic as well as engineering problems. Accelerated erosion within an urban area can cause damage by undermining structures, blocking storm sewers, and depositing silt, sand or mud in roads, basements, and tunnels.

Oceanside is presently experiencing four erosion related problems. These include the accelerated erosion in the soft rocks of the La Jolla Group, rapid weathering of granite rocks, siltation of the lagoons, and rapid beach erosion. The most serious of these is the beach erosion, which not only threatens the personal safety and property of beach residents, but also detracts from the tourist industry of the City.

ABATEMENT OF SEISMIC AND GEOLOGIC HAZARDS

The major limitation at this time to the elimination of seismic and geologic risk is that there is no available technological capability to control or reduce the actual occurrence of seismic hazards.

The abatement of seismic and geologic hazards is primarily accomplished by regulating land use to some degree in high-risk areas, and by proper engineering practices both before and during construction.

Land Use Regulation

At this time, Oceanside regulates development to a slight degree because of geologic criteria. This is done in the Land Use Element of the General Plan by calling for cluster development and slope preservation in those areas of the City which generally contain steep slope conditions. With the adoption of the Public Safety General Plan Element, those areas subject to a high degree of seismic and geologic problems should be more clearly defined. As indicated in the discussion on risk in the preceding chapter, building and land use types can be classified into three general groups based on their potential for disaster. It is recommended that all Group I buildings and land uses be prohibited in those areas of high seismic and geologic hazard. In addition, other approved development should be required to take the necessary engineering precautions to reduce risk to an acceptable level.

Engineering Practices

1. Grading Regulations - The City currently has a Grading Ordinance in effect (Ordinance No. 73-46) which specifies some criteria concerning maximum slope, yards, storm run-off, slope stabilization and treatment of expansive soils.

2. Soils and Geologic Testing - The City presently requires soil borings to be taken on all proposed building sites prior to the issuance of building permits. These borings are generally routine in nature and are used to identify water table levels and presence of expansive soils, uncompacted fill, etc. The Burkland report identifies several other geotechnical investigations which should be accomplished if a site has been identified as being particularly susceptible to certain geologic problems. Burkland surveyed the City and mapped the severity of problems throughout the City as shown on Map 4. Table 1, when used in conjunction with Map 4, identifies the suggested investigations that should be carried out dependent upon the nature of the

problem and the type of land use proposed. It is recommended that the City consider adopting appropriate standards and procedures for geologic testing using the Burkland analysis as a guide.

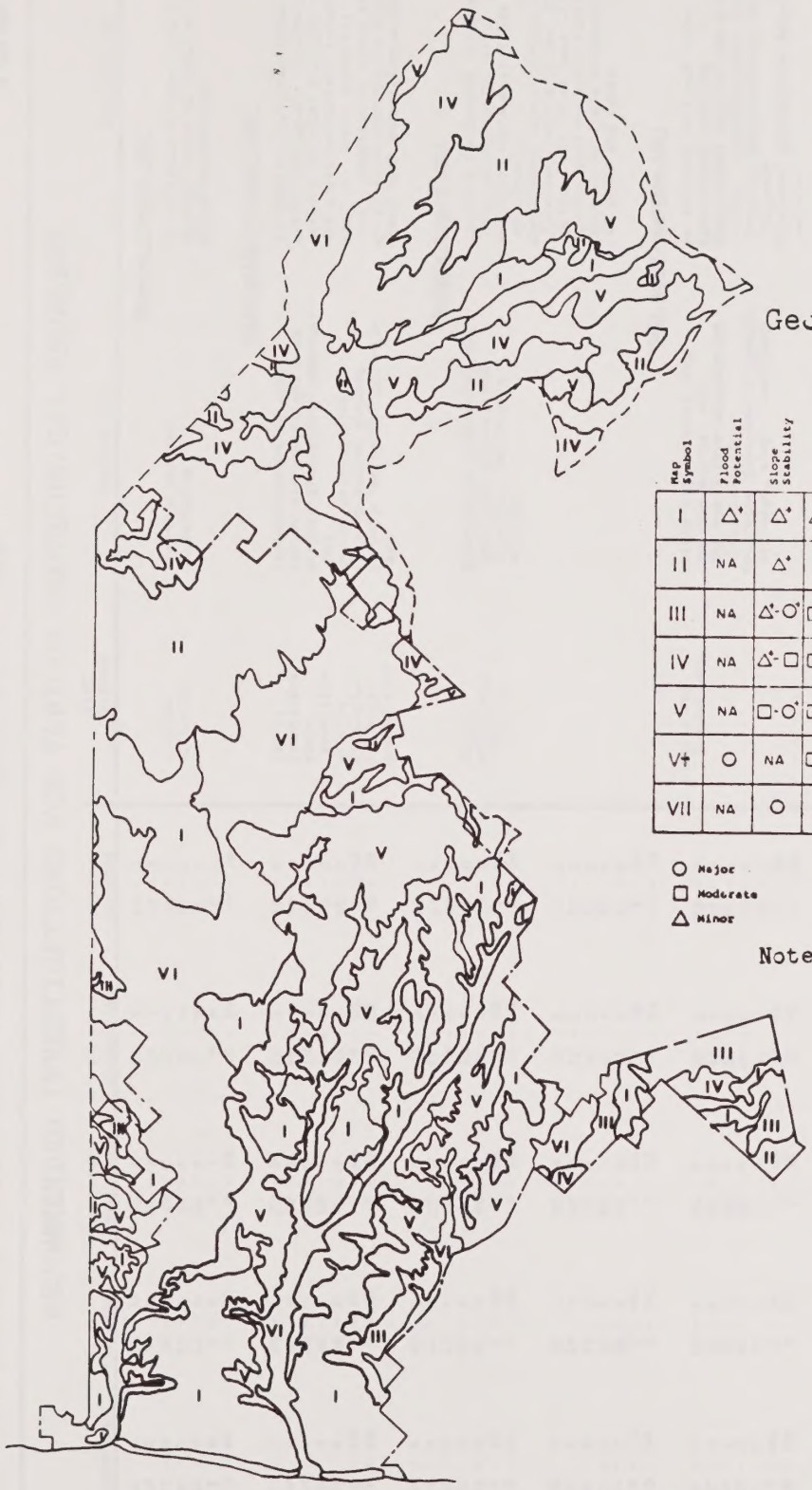
3. Hillside Ordinance - Many cities have recently adopted or are considering special provisions governing development on slopes over a specified steepness (15-30 percent). Such regulations may prohibit development in part, specify development patterns and site layout, or regulate the amount of permissible cut and fill.

A hillside ordinance could be of benefit to Oceanside as a means of providing more precise implementation of the "cluster overlay" of the Land Use Element. A study should be authorized to explore the possibilities of developing hillside regulations for Oceanside as either a separate ordinance or as part of the Grading Ordinance.

4. Building Inspection - The building inspection program in Oceanside is presently geared toward correcting fire hazards and general structural deficiencies. No specific consideration is given to seismic considerations. It is recommended that consideration be given to identifying structures which constitute a seismic hazard and that public buildings so identified be corrected, demolished, or properly marked with warning signs. In addition, architectural appendages such as cornices and parapets should be periodically inspected for weakness and removed or strengthened if necessary.

5. Beach erosion - As mentioned previously, the most severe erosion problem in the City is along the beach front. Solutions to this problem have been under investigation by the Army Corps of Engineers for several years and include possible remedies as submerged breakwaters, a series of rock groins, and beach replenishment. A decision as to which method will prove workable for Oceanside has not been made; meanwhile, the City has been replenishing the beach sand by dredging sand from the Harbor entrance. The latter is only an interim solution.

GEOTECHNICAL EVALUATION



Rating of Geotechnical Problems

	Engineering						Seismic				
Map Symbol	Flood Potential	Slope Stability	Erosion & Siltation	Excavation	Groundwater	Expansive Soil	Lurch Cracking	Liquefaction	Lateral Spreading	Vibration Damage	Subsidence & Uplift
I	△*	△*	△-○*	△*	□	○	△*	△*	△*	□*	△*
II	NA	△*	△*	□-○*	NA	□	NA	NA	NA	△	NA
III	NA	△-○*	□-○*	△*	△*	□	NA	NA	NA	□	NA
IV	NA	△-□	□*-□	□*	△*	□	NA	NA	NA	△-□*	NA
V	NA	□-○*	□-○*	□-○*	△*	□	NA	NA	NA	△-□*	NA
V+	○	NA	□-○*	○*	□	○*	□*	□*	□*	○*	□*
VII	NA	○	○	□	○	NA	○	○	○	○	○

○ Major
□ Moderate
△ Minor
NA Not Applicable
\+ Locally

Note: This map for display only. The original is available from the Planning Department.

N

OCEANSIDE

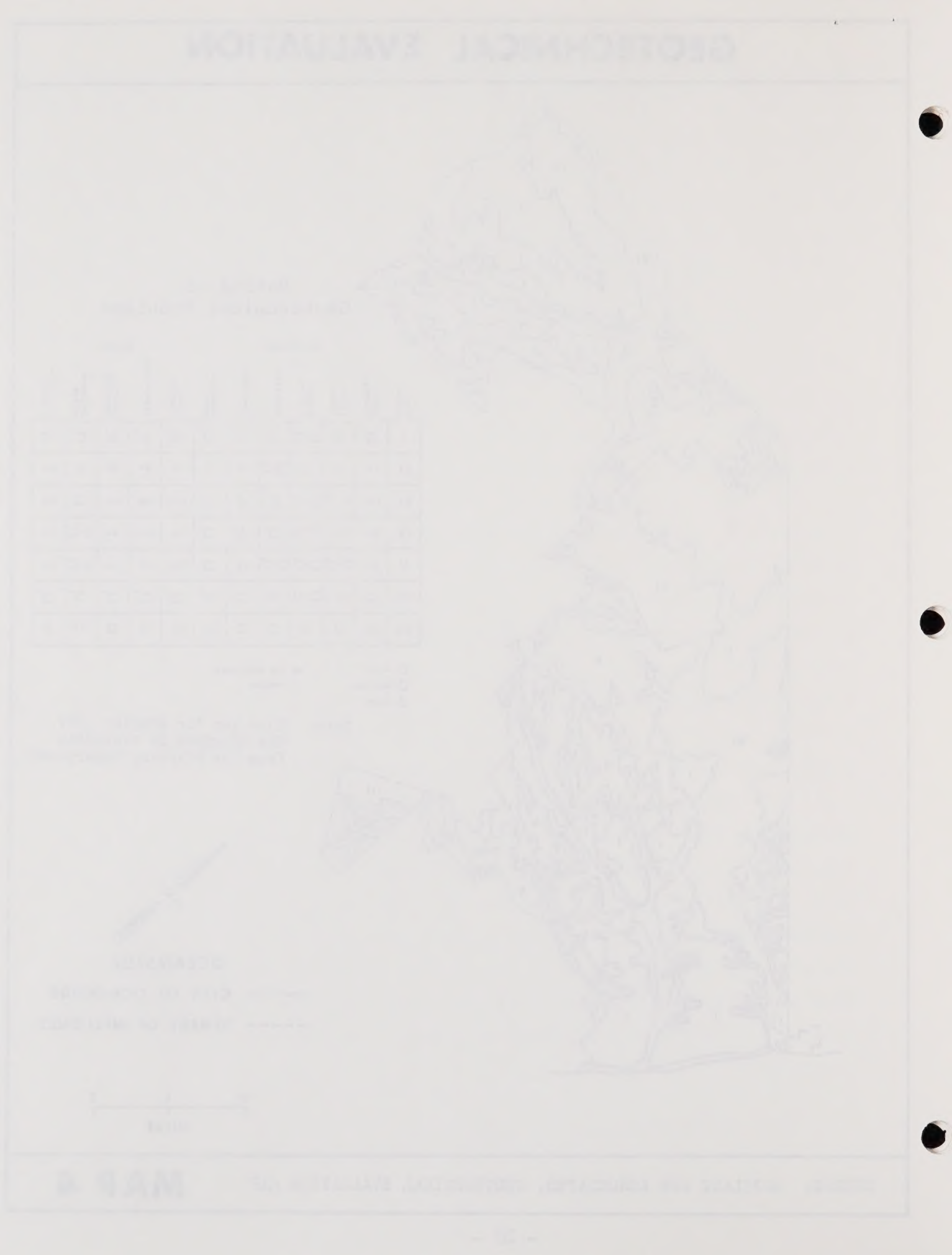
——— CITY OF OCEANSIDE

----- SPHERE OF INFLUENCE

0 1 2
MILES

SOURCE: BURKLAND AND ASSOCIATES, GEOTECHNICAL EVALUATION MAP

MAP 4



Source: Burkland & Associates Geotechnical Evaluation Map

Table 1

RECOMMENDED INVESTIGATIONS FOR VARIOUS GEOTECHNICAL PROBLEMS

MAP SYMBOL	RESIDENTIAL	HIGH RISE	CRITICAL STRUCTURES	LIGHT COMMERCIAL	HEAVY INDUSTRY
I	EG - R SF - R SH - R EC - R SL - R F - R O - NA	EG - R SF - R SH - D EC - R SL - R F - R O - NA	EG - R SF - R SH - D EC - R SL - R F - R O - NA	EG - R SF - R SH - R EC - R SL - R F - R O - NA	EG - R SF - R SH - D EC - R SL - R F - R O - NA
II	EG - D SF - R SH - R EC - R SL - R F - NA O - NA	EG - D SF - R SH - D EC - R SL - R F - NA O - NA	EG - D SF - R SH - D EC - R SL - R F - NA O - NA	EG - D SF - R SH - R EC - R SL - R F - NA O - NA	EG - D SF - R SH - D EC - R SL - R F - NA O - NA
III	EG - R SF - R SH - R EC - D SL - D F - NA O - NA	EG - D SF - D SH - D EC - R SL - D F - NA O - NA	EG - D SF - D SH - D EC - R SL - D F - NA O - NA	EG - R SF - R SH - R EC - D SL - D F - NA O - NA	EG - R SF - R SH - D EC - D SL - D F - NA O - NA
IV	EG - D SF - R SH - R EC - R SL - D F - NA O - NA	EG - D SF - R SH - D EC - R SL - D F - NA O - NA	EG - D SF - D SH - D EC - R SL - D F - NA O - NA	EG - D SF - R SH - R EC - R SL - R F - NA O - NA	EG - D SF - R SH - D EC - R SL - D F - NA O - NA
V	EG - D SF - R SH - R EC - D SL - D F - NA O - NA	EG - D SF - D SH - D EC - D SL - D F - NA O - NA	EG - D SF - D SH - D EC - D SL - D F - NA O - NA	EG - D SF - R SH - D EC - D SL - D F - NA O - NA	EG - D SF - D SH - D EC - D SL - D F - NA O - NA
VI	EG - R SF - D SH - R EC - D SL - NA F - D O - NA	EG - D SF - D SH - D EC - R SL - NA F - D O - NA	EG - D SF - D SH - D EC - R SL - NA F - D O - NA	EG - R SF - D SH - D EC - D SL - NA F - D O - NA	EG - R SF - D SH - D EC - D SL - NA F - D O - NA
VII	EG - R SF - D SH - D EC - D SL - D F - NA O - D	EG - D SF - D SH - D EC - D SL - D F - NA O - D	EG - D SF - D SH - D EC - D SL - D F - NA O - D	EG - D SF - D SH - D EC - D SL - D F - NA O - D	EG - D SF - D SH - D EC - D SL - D F - NA O - D

EG: ENGINEERING GEOLOGIC
SF: SOIL AND FOUNDATION
SH: SEISMIC HAZARD
EC: EROSION CONTROL
SL: SLOPE STABILITY
F: FLOODING
O: OCEANOGRAPHIC

R: ROUTINE
D: DETAILED
NA: GENERALLY NOT APPLICABLE

SITE PROBLEM	ROUTINE (R)	DETAILED (D)
	Erosion Control (EC)	
erosion siltation	drainage control landscaping	in addition to items under routine: erosion rates of rocks or soils siltation control
	Engineering Geologic (EG)	
faults landslides slope stability grading excavation drainage groundwater	reconnaissance of site review literature and maps prepare generalized geologic map review grading plans inspect during grading prepare "as built" geologic map	in addition to items under routine: aerial photograph interpretation prepare detailed geologic map determine subsurface structure analyze: fault potential, groundwater conditions, slope stability geophysical surveys to determine hard rock excavation methods
	Seismic Hazard (SH)	
faults earthquake effects	generalized evaluation of potential primary and secondary earthquake effects	research earthquake records including site strong motion data establish maximum credible and design earthquakes geophysical investigation for fault locations, micro tremor data and primary and shear wave velocities dynamic soil response tests computer analysis of dynamic response of soils and rocks
	Soil and Foundation (SF)	
soils and foundations	obtain soil samples from various depths, test for applicable engineering characteristics determine groundwater levels, drainage, slope conditions	in addition to items under routine: specialized sampling specialized testing and analysis of soils: consolidation, triaxial testing, permeability, dynamic response recommend specialized foundation designs
	Slope (SL)	
slope stability	generalized analysis of stability based on geologic, soil, and groundwater data	in addition to items under routine: determine subsurface structure geologic analysis of rock structure and proposed slopes analysis of soil data for proposed slopes analyze potential seismic effects on slopes
	Flooding (F)	
flood	U.S.G.S. Water Resources Division, flood maps California Division of Water Resources publications	determine flood potential based on 100-year or 1000-year storms analyze drainage basin characteristics
	Oceanographic (O)	
beach and sea cliff erosion tsunami	U.S. Corps of Engineers, beach and sea cliff erosion data U.S. Coast and Geodetic Survey, tide, current and storm data California Division of Mines, tsunami hazard maps	in addition to items under routine: determine - longshore currents, maximum storm conditions, sand supply and movement, maximum wave heights, bottom topography, evaluate all control measures as to effects north and south of area, analyse tsunami hazard

Fire Hazards

The danger of fire is probably the most severe hazard faced by the residents of Oceanside. The probability of fire occurring is higher than for any other natural hazard. Last year alone, the Oceanside Fire Department answered 527 fire calls, which caused a total of $382,303 in property losses. This amounts to a loss of over $7.00 each for every man, woman, and child within the City.

NATURAL HAZARDS

The threat of brushfire is endemic to the Southern California coastal area. Los Angeles County reports nearly 203,000 acres of brushland burned between 1967-1973. In San Diego County, there have been major fires in 1967, 1970 and 1971. The 1970 Laguna Fire resulted in the destruction of 383 homes, 1200 other structures, 225,000 acres of trees and other watershed and numerous small dams, bridges, and roads, totaling an estimated $45 million damage.

Responses to brushfires in Oceanside constitute nearly 1/3 of all fire calls. The City has been very fortunate not to have experienced a major brushfire in recent years because the potential for one has been increasing steadily as residential development has increased into the outlying canyons and mesas. In 1974, there were 166 minor brush fires and grass fires within the City; 95 of these occurred between May and September, of which the highest number, 45, occurred in the month of July.

There are three primary factors that contribute to the brushfire threat in this area - vegetation, climate and development patterns. The chapparal, sage and other native vegetation of Southern California is dry and resinous, making it very combustible, especially during the hot summer months. The normal "fire season" is April through November when strong, hot winds of the "Santa Ana" variety compound the problem and can spread a minor fire into a major conflagration in minutes. The current practice of developing "canyon view" subdivisions introduces the potential for loss of homes and lives into the natural hazard. When this occurs, efforts to eliminate fires are often not accompanied

by adequate brush and weed abatement and clearance measures. This results in an abnormally high buildup of fuel which increases the potential for a disastrous fire.

Brush fire hazards in Oceanside exist to some degree throughout the City; however, it is "high" only in areas in proximity to residential development. The hazard is rated "extreme" in those areas where the vegetation changes from grass and sage to the denser and more flammable chapparal; an even higher risk occurs where residential development is scattered on large lots, where more of the natural vegetation is preserved, than in the standard single-family development. Such an area of extreme hazard is the northern part of Morro Hills. Map 5 indicates those areas of Oceanside where there is high risk of fire from natural hazards.

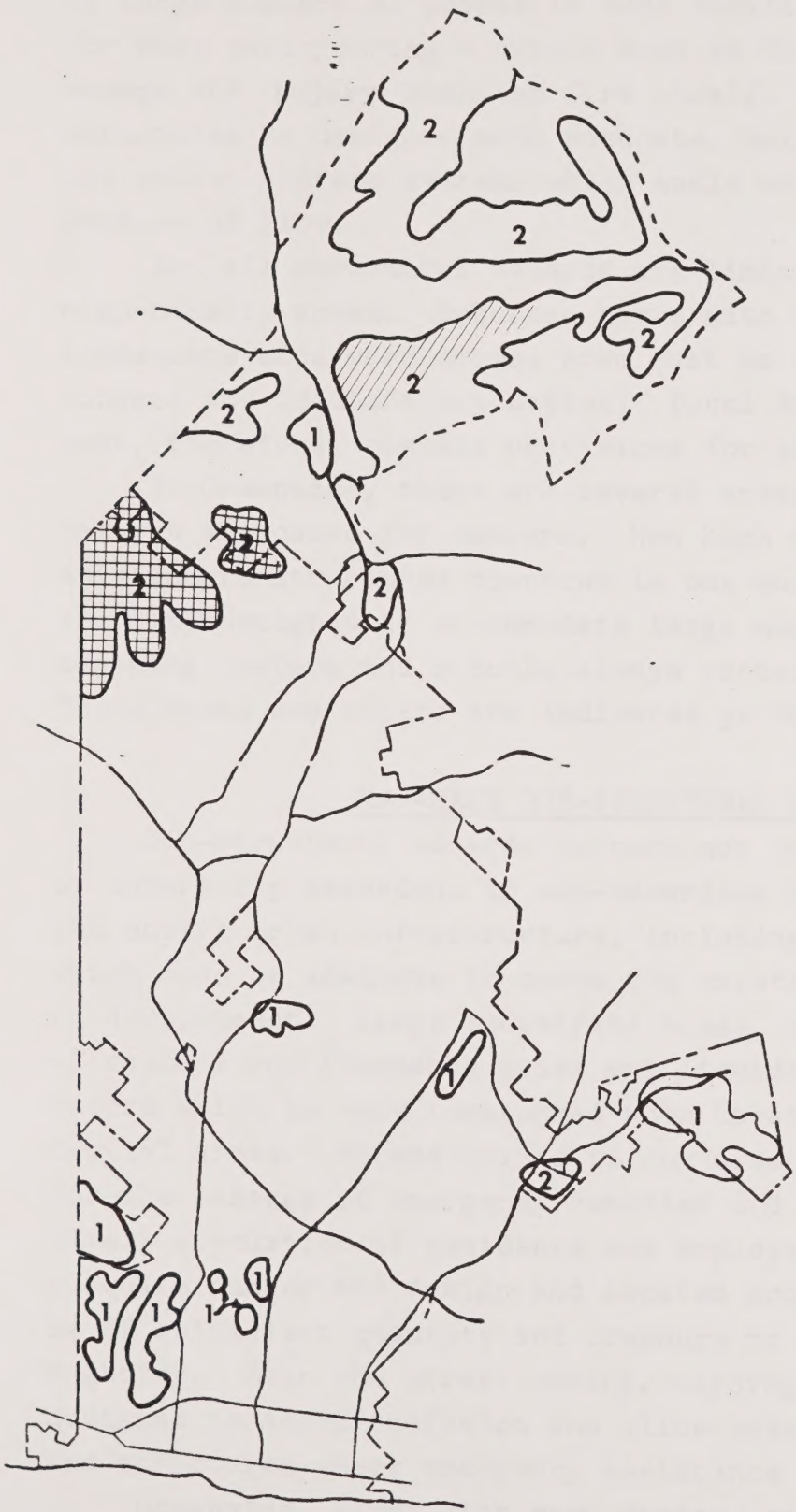
MAN-MADE STRUCTURAL HAZARDS

Fire hazardous structures constitute the greatest man-made fire hazard. These are primarily older structures, characterized by substandard wiring, open stairwells, and obsolete heating facilities. When ignited, fire spreads rapidly inside these structures. Major clusters of these buildings in the downtown area house a variety of commercial and professional uses on the ground floor and low-rent housing units for the poor and elderly on upper floors. A fire in this area could easily spread to other buildings.

High-rise structures, also often occurring in the downtown area, pose another structural hazard. Access of emergency equipment and personnel to the upper stories becomes increasingly difficult. At present, the Oceanside Fire Department can only reach the level of a third-story window (35 feet). Evacuation of a building's occupants, always a problem in high-rise structures, is not even possible at this time from the roof of a three-story building. Internal support systems of such buildings (elevators, ventilation and water pressure) must also be designed to not fail during a fire when they are most critically needed.

Evacuation of occupants is of primary concern also in places of public assembly such as churches, schools, theaters, and

NATURAL FIRE HAZARDS



1 High Hazard

2 Extreme Hazard

Areas of Scattered Residential Development (increases hazard)

New Agriculture (minimizes hazard)

Note: Symbols indicate only general type and location of hazard.

OCEANSIDE

CITY OF OCEANSIDE

SPHERE OF INFLUENCE

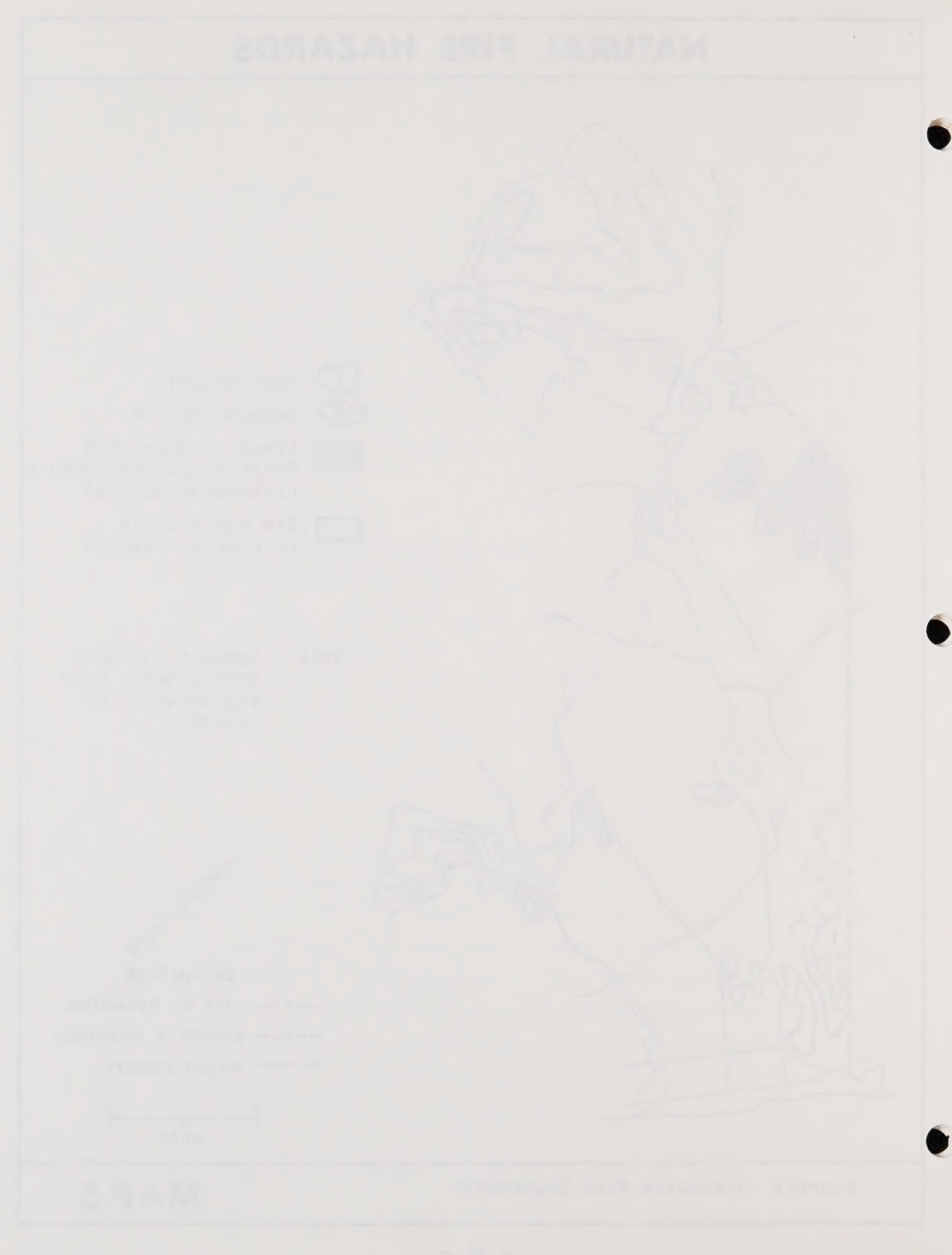
MAJOR STREETS

0 1 2

MILES

Source: Oceanside Fire Department

MAP 5



other entertainment and recreation establishments. The concentration of large numbers of people in such facilities provides the potential for mass panic during a crisis such as fire, often resulting in more damage and injury than the fire itself. It is essential that such structures be designed with adequate, well-marked emergency exits and public address systems which would not be rendered inoperable because of fire.

Not all structural hazards are limited to the downtown and other high-density areas. Suburban homes with untreated shake roofs and inadequate side yard access pose just as serious problems in fire control and occupant evacuation. Local Building and Zoning codes must, therefore, contain provisions for elimination of such problems.

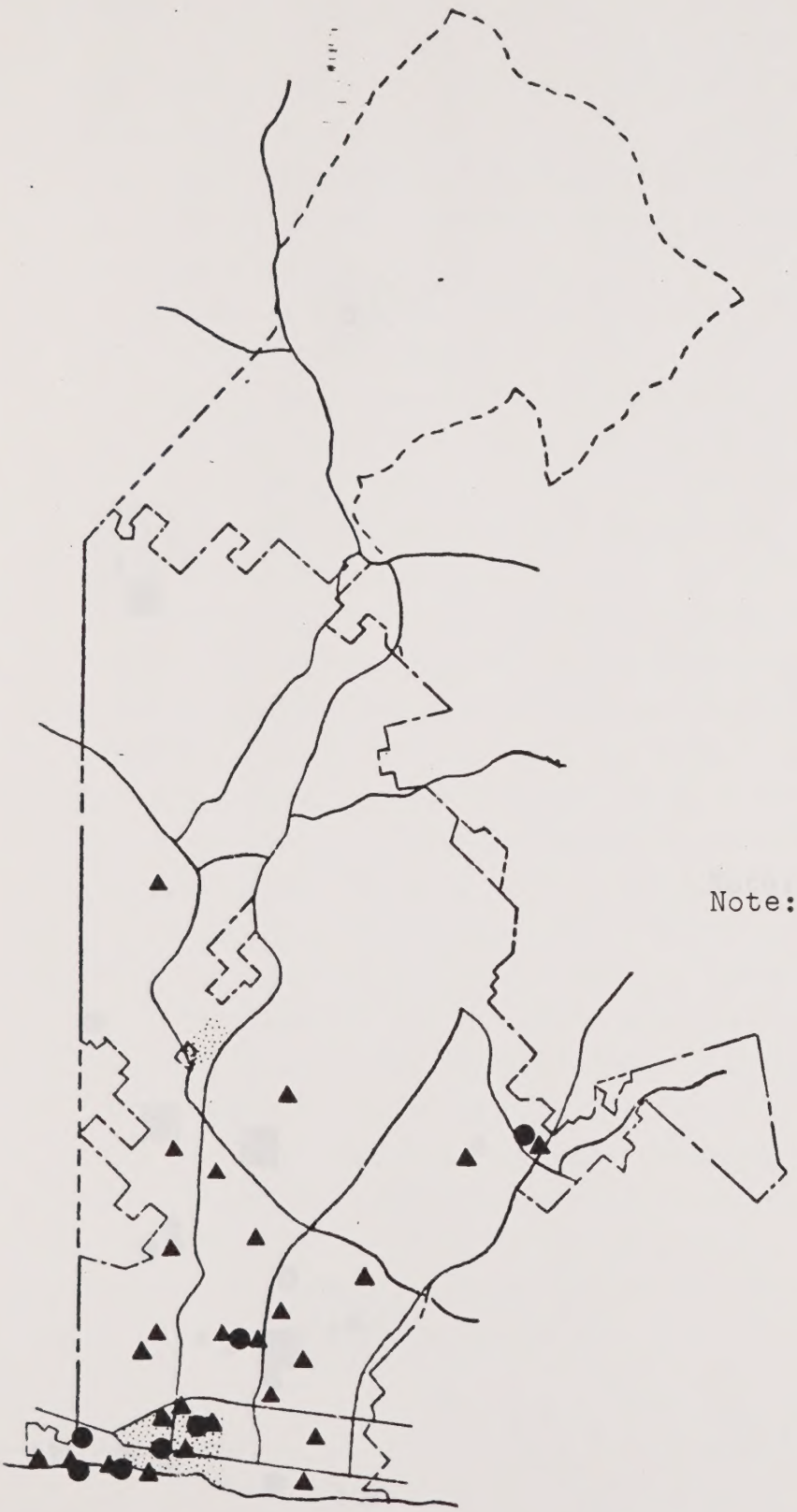
In Oceanside, there are several areas where these structural hazards are cause for concern. New high rise construction among older substandard structures downtown is one such area. Any facility in the City designed to accommodate large numbers of people such as shopping centers and schools always contain the potential for disaster. These areas and others are indicated on Map 6.

MAN-MADE NON-STRUCTURAL HAZARDS

Non-structural hazards concern not only the juxtaposition of inherently hazardous to non-hazardous urban activities but also the entire urban infrastructure, including access and water supply, which must be adequate to serve the existing and expected intensity of development. Large industrial areas, often including the storage of noxious and flammable gases and liquids, are in themselves a fire hazard which is only compounded when located adjacent to large residential areas. Access points to any area must be adequate in size for the passage of emergency vehicles and adequate in number for the timely evacuation of residents and employees. Hydrants must be of adequate number and design and located properly. Water supply must be of sufficient quantity and pressure to meet the demands of fire fighting. Even the street naming, signing and numbering must be designed to avoid confusion and allow easy identification of areas and structures where emergency assistance is required.

Oceanside, along with most cities, contains all of the above problems to some degree. The most serious of these is probably the inadequate water supply and pressure in the downtown area. The location of non-structural hazards is indicated on Map 7.

STRUCTURAL FIRE HAZARDS



Areas Characterized by Older Structures

● Multi-story Structures (three stories or more)

▲ Public Assembly Structures (schools, theaters, shopping centers, etc.)

Note: Symbols indicate only general type and location of hazard.

OCEANSIDE

CITY OF OCEANSIDE

SPHERE OF INFLUENCE

MAJOR STREETS

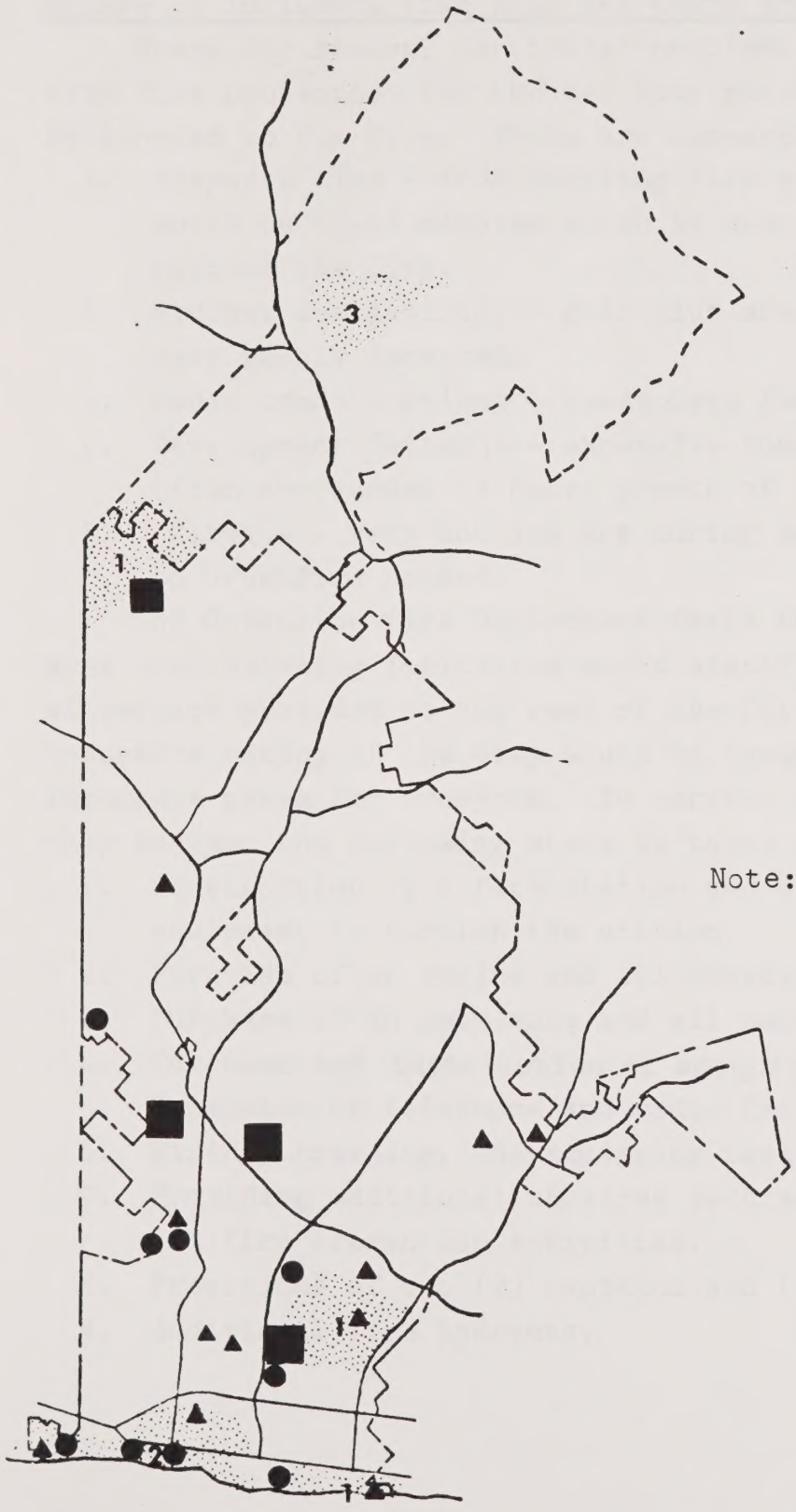
0 1 2

MILES

Source: Oceanside Fire Department

MAP 6

NON-STRUCTURAL FIRE HAZARDS



Areas of Problems Related to Water Supply
- 1 Low Pressure
- 2 Small Mains
- 3 Lack of Hydrants

● Storage of Combustible Materials

▲ Access Problems

■ Areas of Confusing Identification (house numbering, etc.)

Note: Symbols indicate only general type and location of hazard.

OCEANSIDE

CITY OF OCEANSIDE

SPHERE OF INFLUENCE

MAJOR STREETS

0 1 2

MILES

Source: Oceanside Fire Department

MAP 7

Hazards associated with annexations of land within the eastern Sphere of Influence (San Luis Rey Downs Area)

There are several particular problems which would be associated with fire protection for the San Luis Rey Downs area should it ever be annexed to the City. These are summarized as follows:

1. Response time - from existing fire station #5, response time would be 12-18 minutes which is over 2-3 times that for the rest of the City.
2. Hydrant availability - golf club area and fairway estates are very poorly serviced.
3. Radio communications - inadequate for entire area
4. Development Patterns - expensive homes with heavy shake roofs often surrounded by heavy growth of natural brush.
5. Climate - very hot and dry during summer months, contributing to brushfire hazard.

The Oceanside Fire Department feels that trying to service this area with existing facilities would significantly decrease the level of service provided to the rest of the City. In addition, the overall insurance rating of the City would be lowered, thereby creating higher insurance rates for everyone. To correct the anticipated problems, they suggest the following steps be taken upon annexation:

1. Construction of a fire station and purchase of all necessary equipment to furnish the station.
2. Purchase of an engine and all necessary equipment.
3. Purchase of an ambulance and all necessary equipment.
4. Purchase and installation of adequate fuel tanks.
5. Expansion of telephone and radio facilities.
6. Hiring, training, and equipping twelve (12) additional personnel.
7. Providing additional services such as supplies to the station and fire prevention activities.
8. Promotions of two (2) captains and (2) Engineers.
9. Additional fire hydrants.

ABATEMENT OF FIRE HAZARDS

Fire hazard mitigation measures fall into four broad categories as seen in the following four objectives of the Oceanside Fire Department:

1) Prevent fires from starting
2) Prevent loss of life and property when a fire does start
3) Confine a fire to the place of its origin
4) Put out the fire

Firefighting facilities

The City of Oceanside owns and operates five fire stations, providing a three-to five-minute response time to all areas within the City. The locations of the stations and their respective service areas are shown on Map 8. Tables 2 and 3 indicate the equipment and manpower levels of the department at this time. The only serious deficiency as previously noted is the lack of an aerial ladder to service high-rise structures. Steps have been taken, however, to correct this, and it is estimated that the department will acquire the ladder within the next two years.

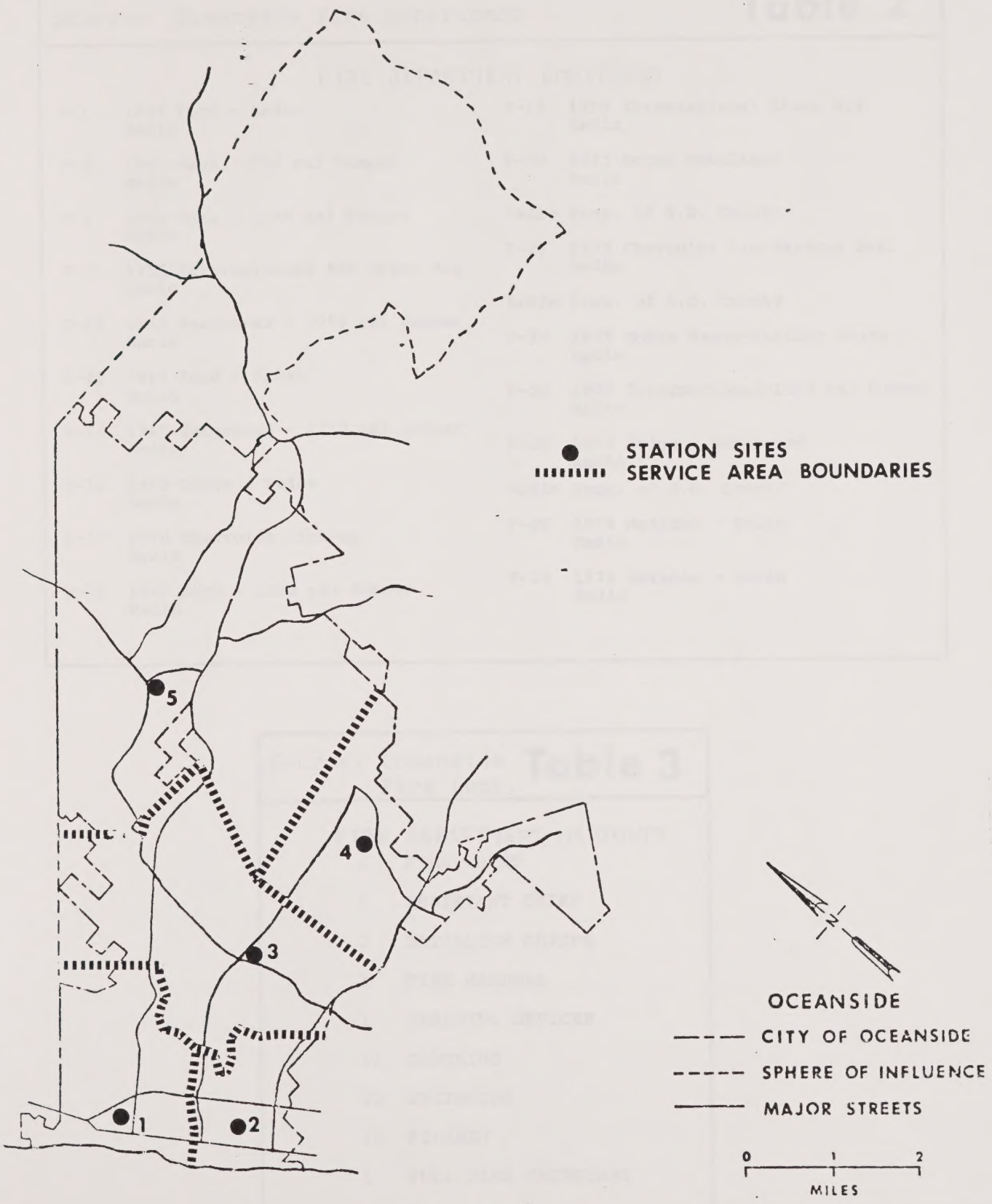
The only other anticipated problem in providing adequate fire-fighting facilities for the City would occur upon annexation of any additional land to the east, particularly in the San Luis Rey Downs areas, as cited above.

Fire Prevention Measures - Structural Hazards

The Code of the City of Oceanside, Chapter 11, establishes criteria governing fire protection within the City. These criteria are supplemented in part by additional standards contained within the City Building Code, Subdivision, and Zoning Ordinances. The more significant measures adopted by the Cityare outlined below by appropriate code or ordinance sections.

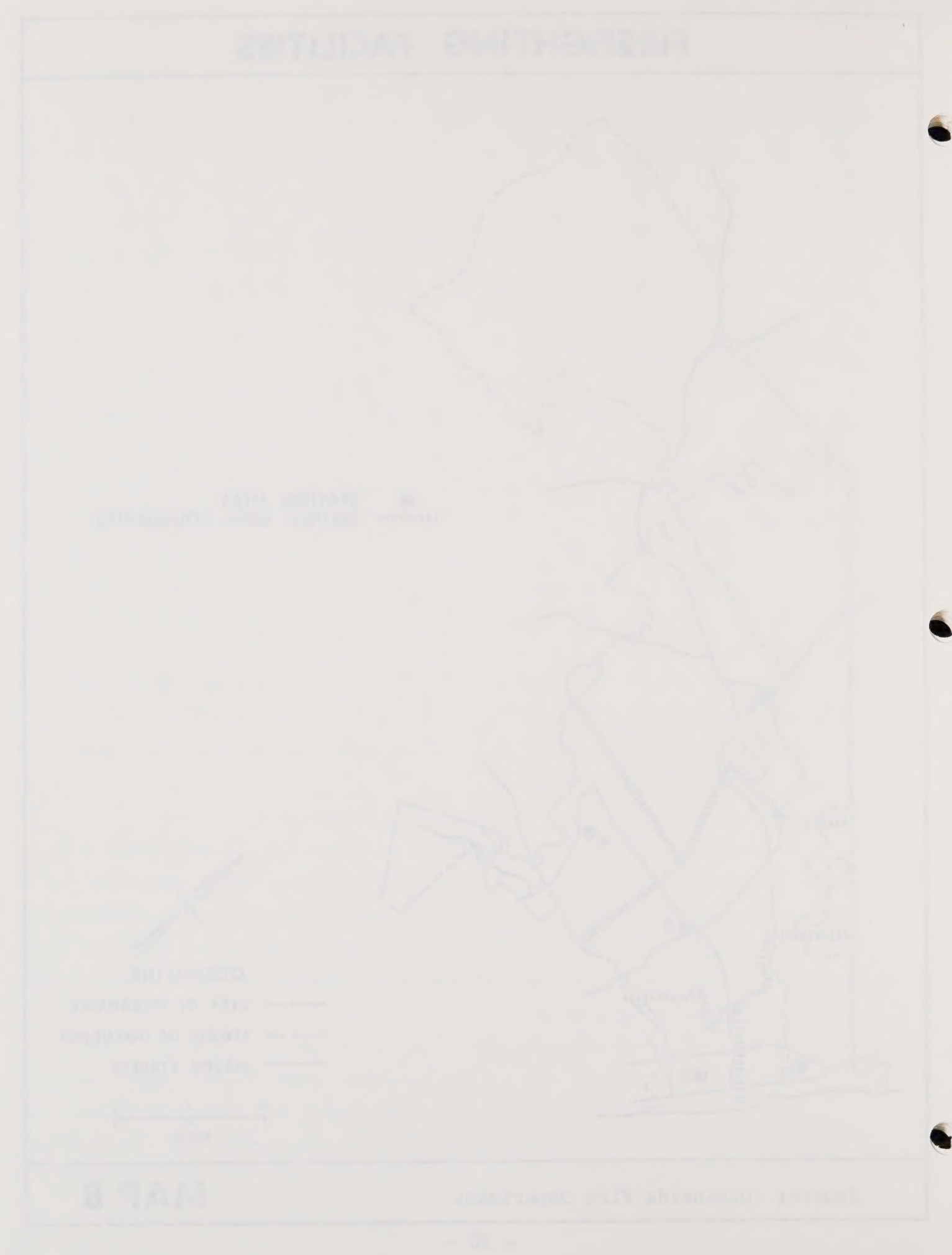
1. Uniform Code Adoptions - Adoption of Uniform Fire Code, 1971 edition, as recommended by the Western Fire Chiefs' Association and the International Conference of Building Officials (Code Section 11.15) and adoption of Uniform Building Code Standards, 1973 edition, published by International Conference of Building Officials (Code Section 6.1).

FIREFIGHTING FACILITIES



Source: Oceanside Fire Department

MAP 8



Source: Oceanside Fire Department

Table 2

FIRE DEPARTMENT EQUIPMENT

F-1 1966 Ford - Sedan
Radio

F-2 1948 Mack - 750 gal Pumper
Radio

F-4 1953 Mack - 1000 gal Pumper
Radio

F-7 1955 International 6x6 Grass Rig
Radio

F-10 1963 Seagraves - 1250 gal Pumper
Radio

F-11 1965 Ford - Sedan
Radio

F-14 1967 Seagraves - 1250 gal pumper
Radio

F-16 1969 Dodge - Sedan
Radio

F-17 1970 Chevrolet Pick-Up
Radio

F-18 1970 Mack - 1250 gal Pumper
Radio

F-19 1958 International Grass Rig
Radio

F-20 1973 Dodge Ambulance
Radio

Radio Prop. of S.D. County

F-21 1973 Chevrolet Van-Reserve Amb.
Radio

Radio Prop. of S.D. County

F-22 1973 Dodge Wagon-Station Wagon
Radio

F-23 1973 International-1000 gal Pumper
Radio

F-24 1974 Dodge - Ambulance
Radio

Radio Prop. of S.D. County

F-25 1974 Matador - Sedan
Radio

F-26 1974 Matador - Sedan
Radio

Source: Oceanside Fire Dept.

Table 3

FIRE DEPARTMENT MANPOWER

1	FIRE CHIEF
1	ASSISTANT CHIEF
2	BATTALION CHIEFS
1	FIRE MARSHAL
1	TRAINING OFFICER
11	CAPTAINS
12	ENGINEERS
49	FIREMEN
1	FULL TIME SECRETARY
1	PART TIME SECRETARY

Adoption of the latest edition of the uniform codes is essential if the City is going to require the most modern practices of construction and fire prevention. Because the current fire code is four years old, a later edition should be reviewed and adopted if it is found to contain significant advances over those contained in the 1971 edition.

2. Access standards - The City requires all roads and fire access lanes to be a minimum of 28 feet in width. It also specifies maximum distances of structures from access points, paving criteria for access roads, design criteria for turning areas and minimum overhead clearances (Code Section 11.26).

3. Clearances around structures - Minimum front, rear and side yard clearances are established by zone in the City's Zoning Ordinance. For residential structures, these are: 20 feet front yard, 15 feet rear yard and side yards equal to 10 percent of the lot width but not less than 3 feet (Zoning Ordinance Section 1701, et seq.). In addition, the City Code specifies minimum clearances around roof signs to be 3 feet in all directions (Code Section 3.24).

The minimum side yard clearance of 3 feet on lots of 30 feet in width or less poses some problems in enforcing firewall requirements of the Uniform Building Code. It also somewhat hampers firefighting operations, especially if extensive landscaping is present. The City should consider requiring a minimum 5 foot side yard on all lots regardless of lot width.

4 Alarm and sprinkler systems - All three-story apartments and hotels or those containing more than 15 or 20 units respectively must have alarm systems (Code Section 11.18). All non-residential structures 1,500-24,000 square feet in size must have fire detector systems. All structures over 15,000 square feet must be fully protected by an automatic fire sprinkler system (UBC Section 38).

5. Establishment of Fire Zones - The City is divided into Fire Zones 1, 2, and 3(Code Section 6.18 et.seq)
Construction within these zones are regulated by the provisions of the Uniform Building Code.

6. Abatement of substandard structures - The City could abate substandard structures when they are obviously deteriorated to the point of being a menace to the public health and safety (UBC Section 203). Aggressive enforcement of this provision could probably help rid the City of many vacant, unsightly, and unsafe structures, especially in the downtown area. Another provision of the Code calls for bringing substandard buildings up to Code requirements when the cost of proposed renovations to such buildings exceeds more than 50 percent of building value (UBC Section 104 (a)). The City does actively enforce this provision.

Fire Preventive Measures - Non-structural Hazards

1. Regulation of flammable liquids storage - Such storage can only be done in an M zone, except that above-ground storage is strictly prohibited in the downtown area (Code Section 11.20). All such uses must be granted a conditional use permit (Zoning Ordinance Article 15). Special requirements also apply to storage of such items in areas subject to flooding (UFC Appendix A, adopted by Code Section 11.18).
2. Water Supply - Water supply requirements are specified by land use type, the lowest being 1,000 gallons per minute for one- and two-family residential development. Water mains must have a minimum inside diameter of 6 inches; one hydrant is required for every 90,000 square feet of net land area (80,000 square feet for industrial and commercial uses). Hydrant design and spacing is also specified (Code Section 11.26).

   As in dicated on Map 6, there are a few areas of the City where the water supply is not up to code criteria. The problem in the downtown area, specifically, is caused by inadequate water mains (2" and 4"). The City should take action as soon as possible to correct these problems, especially in those downtown areas where other structural problems create a hazard in themselves.
3. Beach Fire Regulations - Camp fires are prohibited on the Ocean-side beach except in those areas designated by the City Parks and Recreation Department (Code Sections 19.2, 19.3).

Fire Prevention Measures - Natural Hazards

1. Weed and Rubbish Abatement - City Council can order removal of brush and rubbish after declaring such to be a hazard to the public welfare (Code Section 13.34, et seq.).
2. Suppression and control of hazardous fire areas - Special provisions limit activities and require brush removal within hazardous fire areas (UFC, Appendix E adopted by Code Section 11.18).
3. Construction of firebreaks - Each year a 75-100 foot firebreak is constructed by Camp Pendleton along the Oceanside-Camp Pendleton boundary. This firebreak, in conjunction with the efforts of the Camp's eight engine companies (117 personnel) has been successful in preventing fires from spreading from Camp Pendleton to the City.

Flooding Hazards

In spite of its dry, coastal desert climate, the Southern California area is very susceptible to periodic damaging floods. The small amount of rainfall (10.7 inches per year) occurs primarily during the winter months, often concentrated in storm periods of several days' duration. It is this heavy concentration of rainfall, coming at a time when the ground water level is seasonably high, that causes flooding to occur. Recent urban development on hillsides and in floodplains has increased the rate and amount of storm runoff, and the flood potential.

NATURAL FLOODING

Floods have been recorded in San Diego County since 1770. The most disastrous occurred in 1862, 1916, and 1927; minor floods also occurred in 1938, 1961, and 1969. On the average, the County has been subjected to some degree of damaging flood once every 10 to 15 years.

Oceanside has not been exempt from flood damage. There are three flood prone areas within the City - San Luis Rey River Valley, Loma Alta Creek bed, and Buena Vista Creek bed. Of these, the largest is the San Luis Rey Valley, which is of regional significance and which historically receives heavy damage from flooding. In the 1916 flood, the San Luis Rey Valley was inundated virtually from bank to bank for about 1.5 miles, covering an area of about 1,000 acres. Most of the farms in the lower portion of the Valley were destroyed or damaged, and three to six feet of sand and silt remained when the flood water subsided. On March 8, 1968, an intense local storm flooded several areas of downtown Oceanside, inundating at least 100 homes and businesses forcing radio station KUDE to shut down and disrupting traffic and

business. The floods of 1969 caused $2.7 million in public and private property damage in the County, three quarters of which occurred in the Santa Margarita and San Luis Rey basins.

The location and extent of the natural floodplains are shown schematically on Map 9. Additional maps and more detailed discussion of the potentials and dangers of natural flooding are contained in the Conservation and Open Space Elements of the General Plan.

FLOODING DUE TO DAM FAILURE

In addition to the hazards posed by natural flooding, the San Luis Rey Valley is also subject to flooding from failure of Henshaw Dam, the largest man-made reservoir in the County.

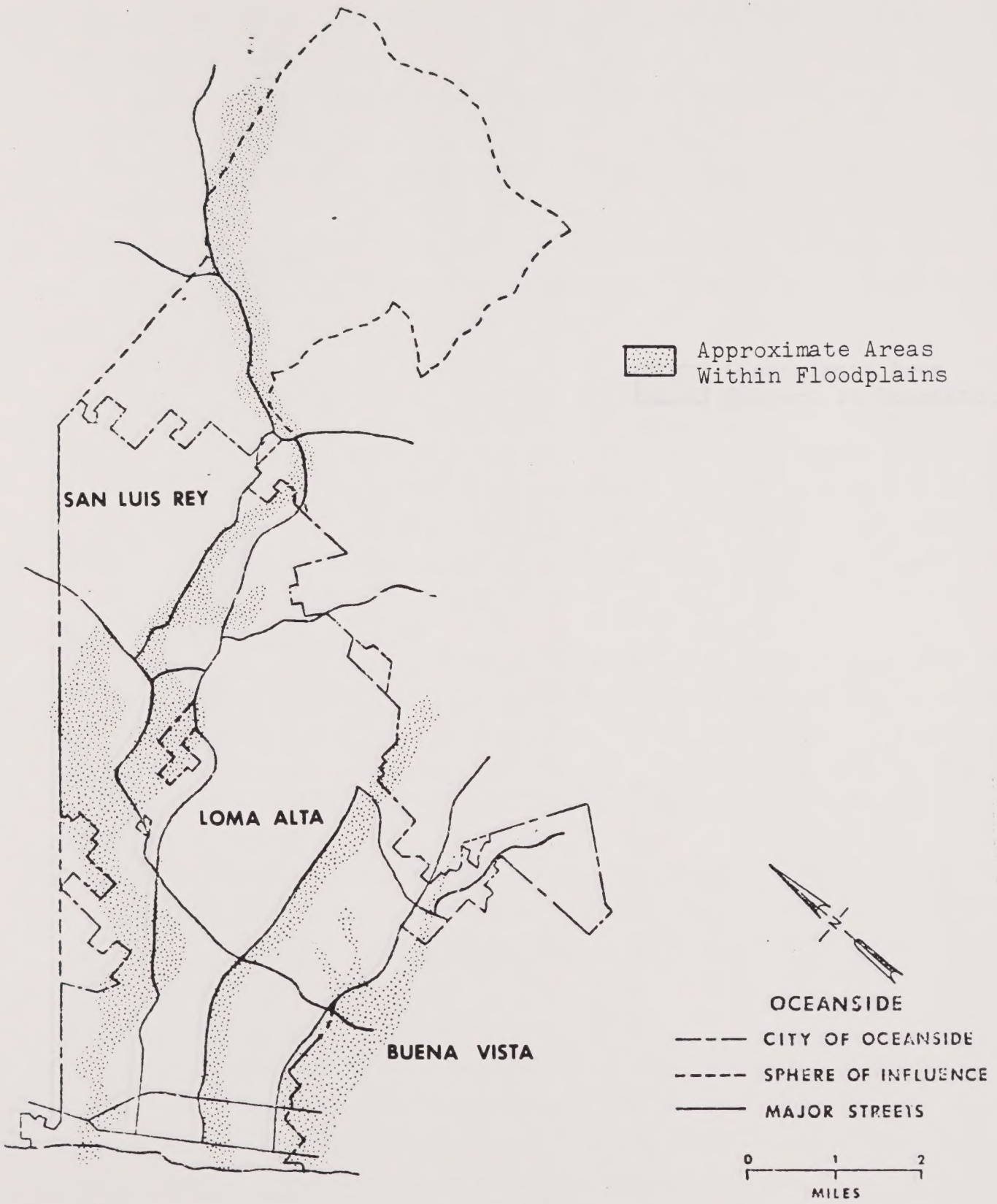
Henshaw Dam, owned and operated by the Vista Irrigation District, was designed to create a lake with a capacity of 203,581 acre/feet of water (an acre-foot is the amount of water necessary to cover an acre of area to a depth of one foot: approximately 325,850 gallons). Since the dam's construction in 1922, the State has determined that its large capacity is not really necessary, and according to the irrigation district, action has been taken to limit the lake's capacity to 50,000 acre feet. This will require reconstruction of the spillway, and pending this, the State is limiting capacity to 18,000 acre feet.

Presently, Henshaw Lake contains only 5.200 acre feet. During the last 10 years, the water level has varied between 2,000 and 50,000 acre feet, averaging about 11,600 acre feet over any 12-month period. The irrigation district attempts to maintain a minimum level of 3,000 acre feet, relying on the seasonal rainfall and ground water from about 25 wells in the Henshaw basin. The lake is generally at its highest level during March and April and at its lowest level in September and October.

Henshaw dam is an earthfill dam which is not subject to the sudden catastrophic failure usually associated with concrete arch-type dams Even if failure did occur, it would be of a slower, erosive type, resulting in less severe peak flows, allowing ample time for evacuation of downstream residents

Map 10 shows schematically the general area of the City which would be subject to flooding upon failure of Henshaw Dam from seismic activity or for any other reason (structural failure, sabotage, etc.).

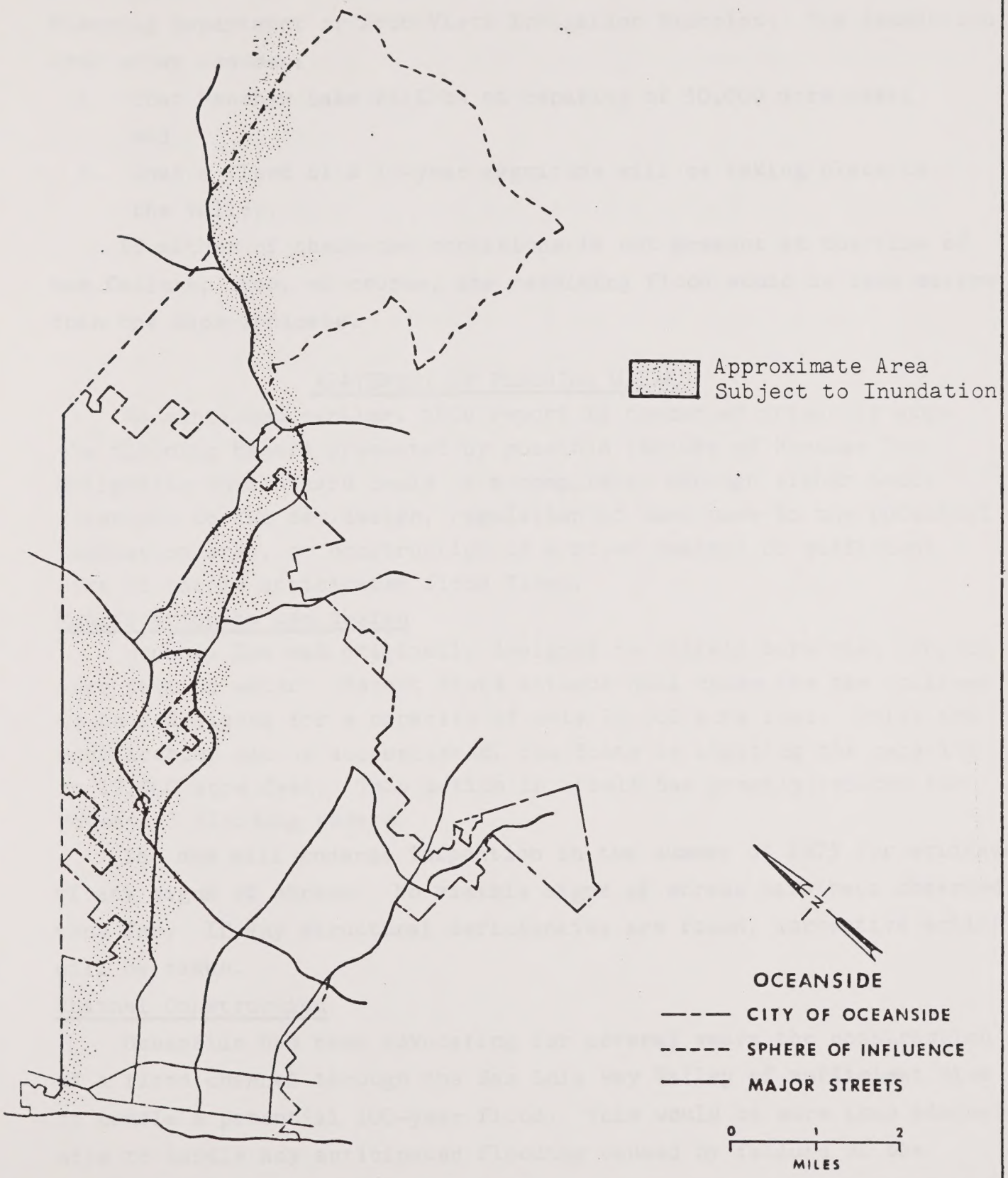
NATURAL FLOODPLAINS



Source: Oceanside Planning Department

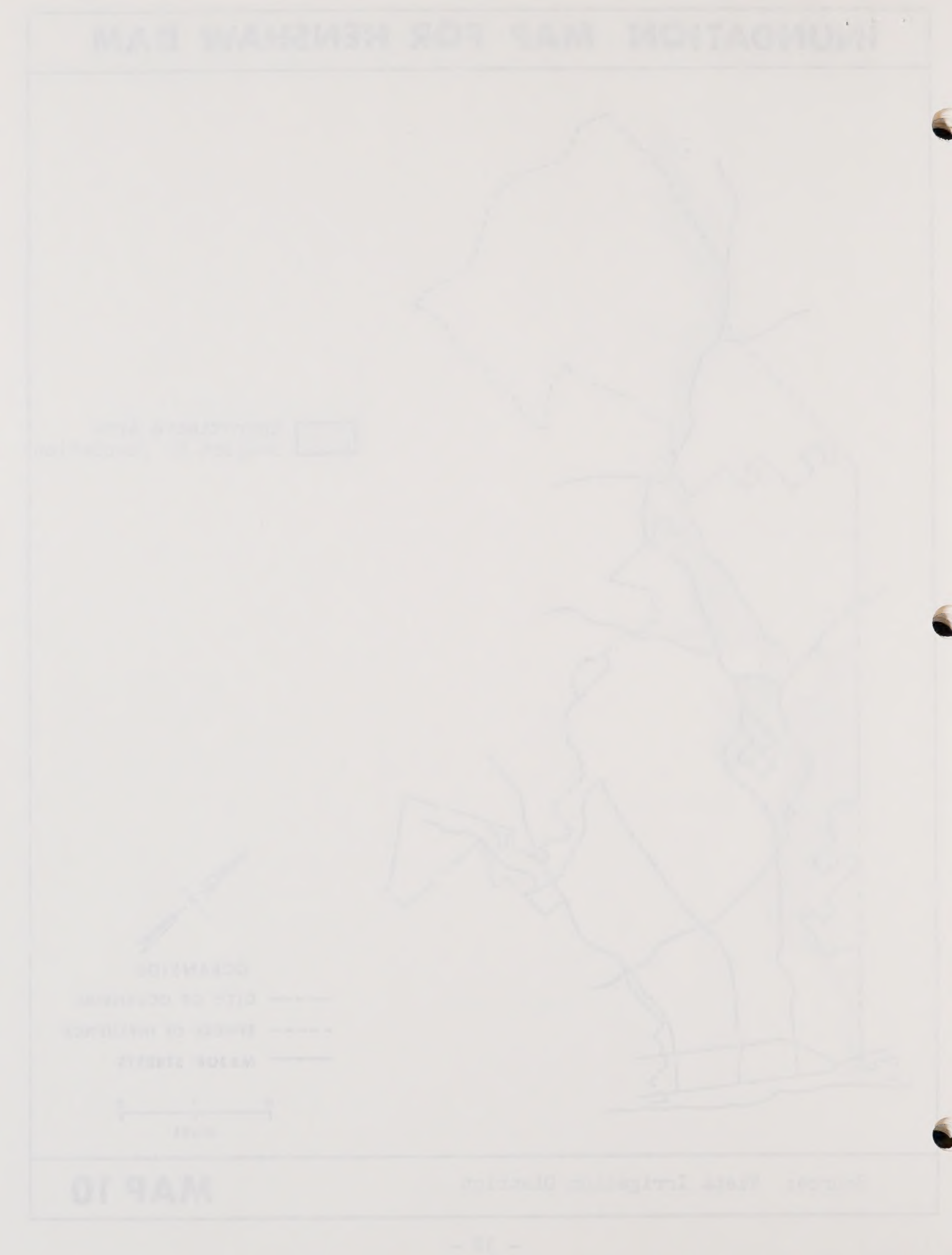
MAP 9

INUNDATION MAP FOR HENSHAW DAM



Source: Vista Irrigation District

MAP 10



Detailed inundation maps are available for study at the Oceanside Planning Department or from Vista Irrigation District. The inundation area shown assumes:

1. that Henshaw Lake will be at capacity of 50,000 acre feet, and
2. that a flood of a 10-year magnitude will be taking place in the Valley.

If either of these two conditions is not present at the time of dam failure, then, of course, the resulting flood would be less severe than the maps indicate.

ABATEMENT OF FLOODING HAZARD

As mentioned earlier, this report is concerned primarily with the flooding hazard presented by possible failure of Henshaw Dam. Mitigating this hazard could be accomplished through either modifications to the dam design, regulation of land uses in the potential inundation area, or construction of a river channel of sufficient size to handle anticipated flood flows.

Modification to dam design

Henshaw Dam was originally designed to contain more than 200,000 acre feet of water Recent State actions will cause the dam spillway to be redesigned for a capacity of only 50,000 acre feet. Until the modification can be accomplished, the State is limiting the capacity to 18,000 acre feet. This action in itself has greatly reduced the potential flooding hazard.

The dam will undergo inspection in the summer of 1975 for evidence of any signs of stress. No visible signs of stress have been observed thus far. If any structural deficiencies are found, corrective action will be taken.

Channel Construction

Oceanside has been advocating for several years the construction of a flood channel through the San Luis Rey Valley of sufficient size to handle a potential 100-year flood. This would be more than adequate size to handle any anticipated flooding caused by failure of the

Henshaw Dam. Presently, City policy is to require adjacent property owners to construct reasonable channel improvements concurrent with development of their land. An application for financial assistance under the Federal Economic Development Act has been contemplated.

Land Use Regulation

Pending completion of the proposed flood channel, the best way to reduce the potential of life and property loss within the flood inundation area is to regulate land uses. Oceanside has recently received maps from the Army Corps of Engineers delineating the natural 100-year flood plain and floodway. These maps, together with the Henshaw Dam inundation maps, should indicate the areas of most severe flood potential; i.e., the flood way. Within these areas, all urban land uses should be prohibited, allowing only agricultural and other open space uses. Within areas of less severe hazard, Group I buildings should be prohibited and other development should be of a low-density type.

Civil Disaster Preparedness

It is a grim fact of life that in spite of the preventive measures which may be taken by Oceanside, risk levels will never be reduced to zero. For this reason, the City is prepared to take the action necessary to minimize life and property damage.

EMERGENCY PLAN

On December 12, 1973, the City of Oceanside adopted an Emergency Plan, which forms the basis for the conduct and coordination of emergency operations within the City. The plan is designed to permit the City to respond to earthquakes, tsunamis, flood, fire, accident, civil disturbance, storm, pollution and epidemic. The plan has a threefold purpose:

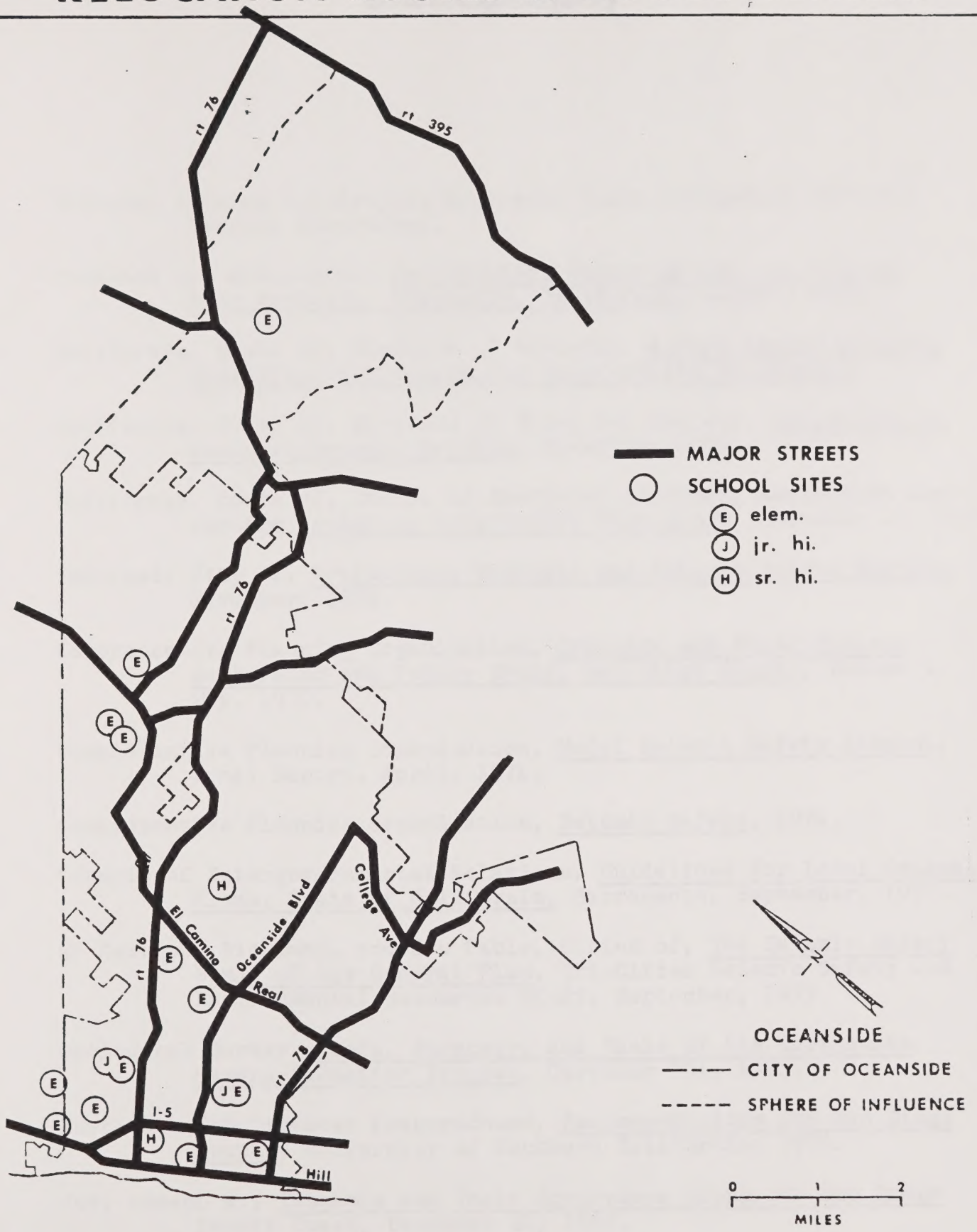
1. Provide a basis for the conduct and coordination of operations and the management of critical resources during emergencies.
2. Establish a mutual understanding of the authority, responsibility, functions, and operations of civil government in the City of Oceanside during an emergency.
3. Provide a basis for incorporating into the City emergency organization those non-governmental agencies and organizations having resources necessary to meet foreseeable emergency requirements.

The plan provides for specific organization and tasking of City departments for emergency situations. Manpower requirements, equipment levels, and provisions for communications and mutual aid are also addressed. Copies of the plan may be examined at either the City Planning or Building Department offices.

RELOCATION/EVACUATION ROUTES

In addition to the measures discussed in the Emergency Plan, relocation routes and refuge centers must be established for people who are forced from their homes during a disaster. The main thru streets and highways within the City would, of course, be the primary relocation routes. The schools would serve as refuge centers, capable of providing food and shelter to many people. The routes and school sites are indicated on Map 11.

RELOCATION ROUTES & REFUGE CENTERS



Source: Oceanside Planning Department

MAP 11

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